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PHARMACEUTICAL JOURNAL

AND

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VOLUME VI.

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CHEMISTS' & DRUGGISTS'

EARLY CLOSING ASSOCIATION.

Abridged Report

OF A

MEETING OF CHEMISTS AND DRUGGISTS,

HELD AT THE

FREEMASONS' TAVERN, GREAT QUEEN STREET, LONDON,

On Thursday Evening, 29th April, 1847.

From the unavoidable absence of Dr. COPLAND, who had been called on a professional visit to Wolverhampton, and was therefore unable to preside, the Rev. R. REDPATH was unanimously elected to the Chair.

The Rev. Gentleman opened the meeting by expressing his strong sympathy for the miseries of the Chemists' Assistants, obviously attendant on the late hours of their employment; and which, together with the preclusion and interruption of their Sabbath duties, required an immediate alteration. He contended, also, apart from the satisfaction which must result from the exercise of ordinary feelings of humanity, in releasing so intelligent a class from such a species of bondage, that great good would result, not only to those engaged in the occupation, but to society at large, under some rational modification of the Chemists' present hours of business. He could not but believe that this very late shop-keeping was productive of prejudicial influence on the moral character and mental development of those engaged in it, and thought that, considering the apparent evils of the practice, the subject had been too long delayed from that publicity of which he deemed it worthy.

The observations of the Rev. Gentleman were received with *much applause,* which was further elicited by his indicating an ardent love of civil freedom, and hatred of every species of slavery.

Mr. Underwood, Honorary Secretary to the Provisional Committee, then read as follows:—

Gentlemen,—In entering upon the business of the evening, the Provisional Committee think it desirable that a report of their proceedings should be first given. They are sorry not to have the pleasure which a contemporary association has had in being this year able to speak of an Annual Meeting, but trust if they receive that co-operation at your hands which they request, and which the lives of Her Majesty's subjects demand, they will be able in another year to offer you that and other congratulations. They have also observed, with the greatest satisfaction, and have been encouraged in their proceedings by the example of many large towns of early closing reputation, thus showing the practicability of the improvement they desire, and have resolved to advocate. The Committee have no wish to act in opposition to the Pharmaceutical Society of Great Britain, but are desirous of co-operating with them to the fullest extent in seeking the interference of the Legislature to compel the complete education of the Pharmaceutist; but they consider that before recognising any bill for this purpose, a modification should be made in the present late hours of employment in the drug trade; for it is impossible, so long as this system exists, that either apprentice, assistant, or master, can attain to that standard of Pharmaceutical education absolutely necessary for the careful and efficient discharge of their important duties. The proposers and supporters of the Pharmaceutical bill now in consideration would do more for its success than any petitioning can do, by at once reducing the hours of employment of those in their service, as they would thus be showing the legislature that what they aim at is the public good, and that they are not desirous of making the trade exclusive from any selfish or sordid motives. *(Loud cheers.)*

A first meeting was held on the 10th of March, in the Council Room of the Pharmaceutical Society, by permission of members of the Council and of the Society who happened to be present at the monthly meeting which took place the same evening, and immediately before the meeting of assistants. At that meeting a resolution was adopted to the effect that it would be desirable to memorialize the Metropolitan Early Closing Association, requesting that the cause of the assistant chemists and druggists might be particularly pleaded at their ensuing annual meeting; a deputation was then formed to carry out this resolution, and to take such steps for the furtherance of the object as might be necessary; for this movement was only considered by the originators of it as preliminary to more energetic measures. A deputation, on the following Monday, waited upon a numerous assembly of the central board of the Metropolitan Early Closing Association, by whom they were most cordially received, and who promised the deputation that especial attention should be paid to the solicitation, requesting a representative in support of the cause: unfortunately, however, in consequence of the lateness of the application, other arrangements could not be superseded, and it became too late for the appointed deputy to address that meeting. Having been frustrated in their efforts in this direction, assistants in the larger retail establishments of the trade were invited to extend the Provisional Committee, who prepared a requisition to the Pharmaceutical Society, which, signed by upwards of 100 metropolitan members and associates of the Society, was presented at the council meeting of April 7th.

To the Council of the Pharmaceutical Society of Great Britain.

"We, the undersigned members and associates of the Pharmaceutical Society, respectfully solicit the grant of the Lecture Room of the Society for a meeting of principals and assistants of the trade generally, to be held at convenience of the council within seven days following the 14th instant. The proposed business of the evening would embrace the formation of an association for shortening the protracted employment of chemists and druggists, so as to allow them time for the prosecution of studies connected with the occupation. Annexed is a copy of the resolutions intended to be moved, which we believe to be of a character in keeping with the best interests of the Pharmaceutical profession."

To that memorial the following reply was received:—

At a Meeting of the Council of the Pharmaceutical Society, on April 7th.

Resolved unanimously,—That the Council of the Pharmaceutical Society having heard read, and attentively considered the memorial presented by members and associates of the Society, soliciting a grant of their Lecture Room for a meeting of principals and assistants of the trade generally, beg to inform the memorialists that they have no power to use or employ the Lecture Room for any purpose not immediately connected with the business of the society.

Several meetings of the Provisional Committee have since been held, the result of which has been that, determined not to be thwarted in a cause dear to every friend, and conducive to the best interests of the trade, they resolved to rely on the zeal and public spirit of their own body, even if unaided by some of its natural supporters, and to call for a decided declaration of opinion through this meeting, and the Association proposed to be formed by it.

Mr. MOWBRAY then rose, and feelingly remarked upon the the paltry remuneration which the chemists' assistant receives, as compared with the rate of other mere manual employments; that while the carpenter in the country obtained fourpence halfpenny per hour for his work, and in London sixpence per hour, working only twelve hours a day, the druggists' assistant gets only twopence halfpenny, and considers himself well off if he succeeds in some of the larger houses to obtain threepence halfpenny, working at the rate of sixteen and seventeen hours a day. He referred to the ruinous competition in the drug trade, which he considered was entirely the result of the system of late hours, and other disagreeables connected with it; for the druggist, as soon as he gets out of his term of apprenticeship, rushes into business without having acquired the experience proper to the public safety, and his own success,—purely for the sake of relieving himself from that continuous toil which is so enervating to both body and mind. Thus an enlarged and ruinous competition was daily increasing, resulting from scarcely any thing less than the late-hour system. He stated, that when engaged in his business capacity, he has often been told by druggists, especially those of recent establishment, when asking of their success, that "we don't expect to make money, but *only hope* (yes, only hope) to make a living, which we could not manage to do without letting lodgings and taking apprentices." Such was the too frequent position of the chemist and druggist of this country. After many other cogent remarks, demonstrative of the little benefit assistants or apprentices had derived from the educational plan of the Pharmaceutical Society, owing to want of time and opportunity, he concluded amidst *much cheering*, by proposing the first resolution :—

"That the present late hour system of employment of Chemists' and Druggists' Assistants and Apprentices, is most injurious to the moral, social, and sanitary welfare of the whole Pharmaceutical body, and unnecessary to the wants of the public."

Mr. HUMPAGE fully concurred in the remarks which Mr. Mowbray had made, and said that in his experience he had invariably found those establishments which were most liberal and considerate to those they employed, were noted for having the best assistants, and always found things go on behind their backs as well as when they were present, whether in the counting-house, warehouse, or shop. He advised the assistants to agitate, *agitate, agitate,* both publicly and in the trade, in furtherance of the worthy cause they had met that night to advocate. The apathy of assistants in not stipulating for time for intellectual improvement, was remarked upon; and he recommended them, when they engaged with their employers, *to stand back*, and ask what time was allowed for the improvement of the mind, and if they should discover the establishment they were applying to was one of the late hour ones, they should pass on and apply to the next, and the next, until they could meet with an employer just enough to allow the opportunity for improvement, which every one has a right to. He was sure that employers would find, as he himself had done, that a love of study on the part of the assistant did not make him less attentive to business, but on the contrary, those who were the most studious he always found most careful of the interests of their employers. Mr. Humpage then seconded the resolution, and was heard throughout with *repeated plaudits.*

Mr. STUART in proposing the next resolution, spoke to the identity of interest existing between employers and employed, and which it was not the object of the meeting to subvert, but on the contrary to promote the lasting interests of both. As an *assistant*, speaking from observation and experience, he ascribed the want of disposition to improvement in the very large class he was connected with, as entirely consequent on the everlasting labour custom, which, by impairing bodily health and mental energy, took away all desire for the acquirement of that *progressive* literary and scientific knowledge, which has now become *essential* to the occupation. A review of the assistant's career was forcibly depicted, with its too often disadvantageous results to the public, by ignorance and otherwise, in which it was also stated that there were many cases of almost poisoning which never found their way into the columns of a public newspaper. The Pharmaceutical Society was then instanced as affording an approved means for a better education than had hitherto existed, and Mr. Jacob Bell commended in connection with its supporters for their services, excepting however the circumstance that the Council of the Society, had on more than one occasion, disdainfully, if not contemptuously objected to countenance the efforts of the assistants at procuring an abridgment of labour, and by which alone they could hope to attain to the proper standard of education required. He observed that it now became the duty of the assistants to help themselves, and to organize an association which should have for its object the amelioration of the present position of the Chemist's and Druggist's assistant. He called upon them to shew that they were men,

"High minded men,
Men who know their rights,
And knowing dare maintain them."

The argument against the misapplication of time sought, for intemperate indulgences, and frivolous amusement, he completely combated, and called upon the meeting, by their co-operation, influence, and example, to establish an Early Closing Association. The practicability of the improvement was then clearly demonstrated by the speaker, who advised as a motto for the Association

"Nil mortalibus arduum est,"

trusting it would ere long be seen in relation to their proceedings, that by united perseverance, and within certain limits, there is nothing impossible to mortals. (Cheers.) Mr. Stuart moved :—

"That the Assistants present regret their inability to avail themselves of the educational advantages of the Pharmaceutical Society, consequent on want of opportunity from too continuous occupation, and this meeeting recognizing the necessity for an abridgment of the present protracted hours of labour, will support every effort to the accomplishment of that important object."

Mr. Rogers, Surgeon, supported the resolution, and observed that after the able and eloquent manner in which the business of this meeting had been opened by the chairman, and after the admirable manner in which the gentleman preceding him had addressed them, it would indeed be an act of supererogation to occupy their attention for any lengthened period upon that occasion; but having a fact to bring forward, to the truth of which he could testify, inasmuch as he was the party interested therein; and considering that facts, with fair and just inferences drawn from them, exerted a far greater weight upon the reasoning power of an auditory than mere general statements, he would be excused for occupying their attention for a few brief moments whilst he related a passage of his own early history, pertinent to the resolution which he had on this occasion the honour to second.

It was now some years since that he left the country, to become an apprentice to a surgeon, chemist and druggist, on the other side of the water, opposite Astley's Theatre. During the period he was there on trial, he had nothing to complain of as regards the treatment he met with; it indeed presaged a happy and contented existence; but when he had been firmly bound for a term of years, how very different was the treatment he had to endure. His occupations commenced at seven in the morning, and terminated at eleven and twelve at night. If, with the feeling natural to that age, he wandered to the window to observe and comment upon the scenes that occurred in the busy streets before him, he was sternly ordered to get about something useful, and not to waste the time of his employer; if, on the other hand, animated with a desire of improving his mind, he took into his hands a book, he was still more sternly ordered to put it down, it was unbusiness-like. During the whole period of his residence there, never but on two occasions was he allowed to attend a place of worship, but was allowed the interval between eight and eleven on the Sunday evening to take what was called a run. A similar *indulgence* was extended to him subsequently on Thursday evenings; and well did he remember with what feelings of joy and exultation he was accustomed to run over the bridge to this side of the water, where his relatives lived, like a bird that had recovered its liberty. So intense a feeling of disgust and horror was engendered in his mind, that he hardly ever passed by that house without a strange mixture of joy and dread,—joy that he was emancipated from it, and dread at the memory of what he there endured. So great was the contrast between his former and then mode of life, that daily and weekly he found, as a consequence, the ruddy hue of health fast disappearing from his cheeks, to be replaced by the pallid look of the neglected denizen of the courts of this crowded city. This life continued for twelve months, at the end of which period a lingering illness brought him to the brink of the grave, and for ten weeks he was unable to follow his occupation. On his return to employment, finding that similar treatment would be adopted towards him, and seeing a long term of years, during which he could not but expect its continuance, he did what he would not advise any of his hearers to do, but what he would do again under similar circumstances, he ran away.

And now he would ask whether the story he had told was not applicable to the condition of most of those he was then addressing? Whether the same fearful exactions of time, whether the same fearful encroachments upon their health, were not daily and weekly required of them? Could society require such sacrifices at their hands? He would tell them, no: and more, that if this practice be much longer continued society would pay the penalty consequent thereon. How many of his hearers were there not thirsting for the time, the opportunity to cultivate their minds;—how many amongst them at this present period required that necessary invigoration of the animal framework, which less labour resulting from shortened hours of toil would give them? He paused for their reply. *(Great cheering.)* The reply which they had given, told him that he had struck a chord in their bosoms which would vibrate to effect.

He regretted that circumstances which he could not control compelled him to leave the meeting so early; and, in conclusion, stated his deep sympathy with the movement, and felt its justness; and as far as his humble aid could be useful in the cause, on this or any other occasion, he said they were heartily welcome to it.

Mr. Healey proposed the third resolution, and warmly espoused the Early Closing Movement on educational grounds, stating he believed the day was not far distant when the late closing druggist would only be another word for the incompetent druggist, and that their hour of closing would be a test of their respectability. He further congratulated the meeting upon a large influential west-end establishment having been, since this movement was set on foot, closed one hour earlier than had previously been the case. He moved:—

"That this meeting has observed with the utmost satisfaction that the Chemists and Druggists of the subjoined towns have adopted the principle of early closing, demonstrating by example the practicability of the improvement advocated—Belfast—Brighton—Bradford—Colchester—Chatham—Dublin—Dudley—Edinburgh—Gravesend—Liverpool—Leicester—Pontefract—Salisbury—Truro—Whitby—Whitehaven—Worcester—Yarmouth.

Dr. Scoffern had come to the meeting without the least idea of taking a part in the proceedings, he stated that he had been solicited to assist in the formation of the Early Closing Association, but declined from a desire that the movement should go forth to the world in its true and proper light, as an intrinsic movement, originating with the assistants, and not as would be affirmed, the concoction of himself and friends from interested motives. He repeated again that he had not the least idea of addressing the meeting, until he found on entering the room that the gentleman who was to have seconded that resolution had been unavoidably called away, and he could not consistently with his true feelings in the cause, refuse to take his place. He remarked that of the many classes who had at last risen to advocate the Early Closing Movement, none could adduce such powerful arguments in its favour as the class of Chemists' Assistants,—the argument of the necessity for education, to fit them for becoming the grand rivers of public health;—let it be once demonstrated to the public that the occupation should be an intellectual one, that dispensers of medicine should not be mere machines; let it be once proved, as it can be, that education is necessary as a guarantee for public safety, and that education cannot be acquired under present circumstances; let it be shown that every prescription received by the dispenser is brought under the very wings of the angel of death, who waits to see what victim a word mis-read, or the fraction of a grain mis-weighed, may give; and the public, actuated by two of the strongest motives which influence mankind, interest and fear, would shun the late-hour shopkeeper as a pestilence and a nuisance. Could it be said that mistakes and fatal mistakes did not frequently occur from wrongly dispensed prescriptions, assuredly such instances it would not be difficult to mention, although circumstances sometimes favoured their concealment. Death was a very probable result of disease, and not a very improbable one from taking physic, and the cause of death therefore rested between Nature, the Physician, and Dispenser; thus a world of error might remain for a long time unknown. Mistakes resulting from the most marked indifference to chemical nomenclature frequently occurred: some articles recently required by the doctor were instanced as having been wrongly supplied to him, by a chemist and druggist whom he could but would not name, and on personal representation of the difference, he was told that (notwithstanding one of the substances sent for was comparatively innocuous) the *poisonous* article supplied to him was a *better* compound than he had ordered. What would have been the consequences in a prescription he left them to imagine. Whence, he would ask, the first distinctive name of the occupation? Why was it that the trading chemist of this country had hitherto so obscurely indicated his capabilities? Why was it that chemical philosophers had not come from the pursuit of the occupation they were supposed to be trained to? It was not so on the Continent, and it ought not to be here, neither would it be so, but from incessant toil preventing those well disposed to improvement from even educating themselves. He held it to be an incontrovertible fact that the trading chemist would be impelled by circumstances, which could not be controlled, into a far higher position than he had hitherto occupied, and therefore it became the more requisite to prepare themselves for the new position. He concluded by urging the trade to unanimity of purpose, and repeated that by acting on the interests and fears of society, to the better arrangement of business hours, that all classes would be materially benefited by the change.

Mr. **Nash**, secretary of the Metropolitan Early Closing Association, was received with considerable applause, and forcibly pleaded the cause of the Assistant Chemists and Druggists on general grounds; he observed that from what he had heard at this meeting, he certainly should be afraid to send for medicine to any but the most respectable shops, and he should judge of their respectability by their hour of closing. He moved:—

> "That for the better attainment of modified hours of business, an Association be now formed, to be called the Chemists' and Druggists' Early Closing Association, and that a Committee of the following gentlemen be appointed to conduct the business of the Association with power to add to their number,

Mr. BARKLEY
— BARNES
— CLIFTON
— FRY
Mr. HEALEY
— MATTHEWS
— PENNY
Mr. STUART
— UNDERWOOD
— WHEELWRIGHT.

Mr. SAUNDERS, Mr. FORDRED, and Mr. HODGSON have since been added.

Mr. **Saunders**, in seconding the last resolution, feared that but little opportunity was left him to advance any ideas of importance, after the able remarks which had been presented by the gentlemen who had severally addressed the meeting; and this difficulty appeared augmented when he considered that he stood in the position of a principal, and not in that of an assistant; yet it did not require any great power of vision to perceive, that whatever contributed to the qualification or advancement of the assistant redounds, no less to the advantage and *bona fide* emolument of the employer; for it could not be supposed that any one possessing knowledge would fail to turn it to practical account during the routine of business, and therefore, while such an one was reaping credit for his abilities; his employer was sharing the reward for the opportunities he afforded to the cultivation of those abilities, in the increased value of the services rendered him. It was with real pleasure he desired the prosperity of this movement, which, indeed, he believed would have a satisfactory issue, from the methodical manner in which it was commenced. The chief points of consideration were, first, the most desirable hour for suspending business; and, secondly, how this was to be accomplished. He thought that assistants had in many instances injuriously affected the feelings of employers, otherwise favourable to a step like this in motion, by seeking too great a limitation of business hours; but in his opinion, if a general hour for closing was practicable, that hour should be eight o'clock, since it was the period at which the wholesale department was usually despatched, and we might fairly take that for a guide in the present instance.

It could not, however, be overlooked, that there were many great points of difference between the wholesale and retail branches of the business. In the former there was no liability to the sudden call of illness; in the latter the dispenser was ever exposed to such interruptions, hence business was affected accordingly. Although these interruptions existed, and must of necessity, it was not to their influence that the long hour system was due, and therefore they formed no excuse. It originated in a pernicious desire of gain; and the public being once allured to the undue convenience offered them, thoughtlessly continued their advantage. It had been said that the locality must guide the hours of business, that in proportion to the poverty of a neighbourhood so must the shop be kept open, but the experiment had been made in many large cities and towns throughout the kingdom with success, and were there no poor districts in those places?

In considering the most practicable way in which this reformation could be effected, and remembering that the retail chemist must of necessity continue to be exposed to the sudden calls of invalid customers, he ventured to suggest the following plan:—Let the shutters be put up at eight o'clock, p.m., thus marking the termination of the daily routine of business; let each member of the establishment enjoy liberty from that hour, saving one who would remain to answer any unexpected application for medicine. Let this duty be undertaken by each in the house by rotation; and where it should so occur that the business was conducted by only one assistant and the principal, let that employer share the duty with his assistant, and no great boon either to the latter! The advantage thus given would redound to reciprocal benefit. In this way, the wants of suffering humanity would be supplied effectually, and that desired end, the mental improvement and increased business qualification of the druggist's assistant, easily gained.

A vote of thanks to the Chairman for his kind and able assistance was carried by acclamation, and the meeting, after a liberal subscription, adjourned, highly gratified with the proceedings of the evening.

TO THE PRINCIPALS AND ASSISTANTS IN THE DRUG TRADE.

Committee Room,
Anderton's Hotel, Fleet Street.
May 8th, 1847.

The Committee request the assistance and co-operation of their friends in the country in support of this Association, and would suggest the propriety of committees being formed in all the principal towns to collect subscriptions and circulate information on the subject.

The Committee believe that as long as the Late Hour System continues, calamities like Cronin's will never be absent from the practice of the Pharmaceutist, for the Druggist cannot under the present system attain to that standard of literary and scientific knowledge which is so requisite to the careful and efficient discharge of his important duties; and consequently they consider it unnecessary to urge further the necessity of making every effort for the advancement of Pharmaceutical Education; and they confidently anticipate that any indication of a desire to obtain opportunities of improvement will meet with the sympathy and obtain the approbation of all interested in the progress of Pharmaceutical Knowledge.

In referring to the Report for an explanation of the objects of this Association, the Committee beg to state that they expect no sudden or immediate alteration of present arrangements, nor is it their wish to sanction any steps likely to be offensive or injurious to employers, but that they hope to effect the desired improvement by a patient perseverance in the use of conciliatory measures—by appeals to the medical profession, and to the public generally—and, by a proper representation of the inutility and evils of the present Late Hour System, to unite the trade in an effort for the accomplishment of the proposed alteration.

The Committee earnestly hope, that the interest taken in the attainment of the desired object will be manifested by your favouring them with your names and contributions.

It is intended the Association shall consist of Principals and others as Honorary Members, subscribing 10*s.* 6*d.* and upwards per annum, and of Assistants, Apprentices, and others as Members, subscribing 5*s.* and upwards per annum, in aid of its funds. Donations and Subscriptions will be thankfully received.

J. UNDERWOOD, *Hon. Sec.*

Communications and subscriptions can be forwarded per post office or banker's order *only* to the Honorary Secretary, at the Committee room as above.

H. Morton, Printer 2 Crane-court Fleet-street, London.

THE PHARMACEUTICAL JOURNAL.

VOL. VI.—No. I.—JULY 1st, 1846.

THE PROGRESS OF THE PROPOSED PHARMACEUTICAL BILL.

We had fully expected and hoped to have been enabled before this time to furnish our readers with a copy of the proposed Bill, but the Council objecting to issue it officially in an imperfect state, the publication has been delayed during the reconsideration of some of the clauses, which were not altogether satisfactory.

The suggestions offered by the President and Censors of the College of Physicians to the Deputation, at the interview on the 19th of June, must be further considered by the Committee appointed to act in reference to the Bill, and must also be decided on by the Council, before we should be justified in publishing the Bill, either in its present form or with the modifications now proposed.

The appointment of a joint Board of Examiners, consisting of Physicians and Chemists, makes a material alteration in the constitution of the College of Pharmacy as originally projected, and in carrying out such an arrangement, precautions must be taken to ensure the harmonious working of the plan. While forming a Pharmaceutical Institution, it is important on our side to maintain the independence of our own body, at the same time availing ourselves of such beneficial assistance as the College of Physicians may be disposed to afford. It is equally important to the College of Physicians to maintain its own dignity and independence, and to avoid officially placing any of its members in a position which might be considered derogatory if identified with, and under the control of another body. These considerations are matters of detail which must not be overlooked on either side; and on our part we must recollect that we are endeavouring to legislate not for the present age merely, but for succeeding ages, when there is reason to believe that a material improvement (the result of the legislation itself) will take place in the qualifications and character of our body, which should enjoy a position in the profession corresponding with such improvement.

We hope to be able in our next number to give further particulars respecting the progress of the proposed arrangement, with a copy of the entire Bill, which we are anxious to see published as soon as those portions of it now under consideration have been satisfactorily completed.

The outline of the Bill, which we have already given, appears to be approved by our brethren in Ireland, if we may judge from the following remarks in the *Dublin Medical Press*, of June 17. After quoting our leading article of last month respecting the proposed College of Pharmacy, and the Examination of Chemists and Druggists, the Editor proceeds to observe—

> "Should such a Bill as this be introduced into Parliament, the extension of its provisions to Ireland must be demanded. To leave this country as it now is, without any provision for the education of an Apothecary or Pharmaceutical Practitioner, is monstrous. Let the representatives of the sixty shareholders of the Dublin Apothecaries' Company proceed with the manufacture of mongrel doctors if they will, but let the Physicians and Surgeons of Ireland have some provision made for compounding their prescriptions. We do not advocate the measure of an entirely free trade in the compounding and sale of drugs, but we do advocate such freedom of trade as will permit competent Chemists, not educated or practising as Surgeons or Doctors, to compound and dispense Medicine. That Chemists are even now just as fully authorised to compound prescriptions in Ireland as they are in England, we are firmly convinced; and that the monopoly usurped by the Apothecaries' Company with the aid of law intimidation, could not be maintained, if properly resisted, we are equally certain.

THE SALE OF MEDICINES BY UNQUALIFIED PERSONS.

THE discussions arising on some of the details of the proposed Pharmaceutical Bill have elicited numerous communications from our brethren residing in various parts of the country. Among the several subjects thus canvassed, there is none which appears to excite more interest than the restriction which is proposed on the dispensing of prescriptions, and the practice of Pharmacy in general by unqualified persons.

In our last number we published extracts of letters from Mr. Robert Raw and two other correspondents (page 576), in which are pointed out the evils likely to result from sanctioning by law the sale of medicines by chandlers, hucksters, and other uneducated persons. These remarks have, as we anticipated, drawn attention to the question, and several able letters have been subsequently received containing similar sentiments. Some of the communications alluded to have been addressed to the Council, others to the editor.

The facts and arguments thus prominently and officially brought forward, have induced the Council to reconsider the clauses relating to the prohibition, and some alterations have been made in order to obviate the objections. We are glad this opportunity has occurred of obtaining information respecting the abuses existing in country districts, comprising facts which do not come immediately under the cognizance of the members residing in the metropolis.

It appears from the evidence before us, that great mischief arises from the indiscriminate sale of medicines, whether simple or compounded, by persons who are ignorant of their qualities, and who possess no claim to be recognised as Chemists and Druggists. Such persons, not being able to distinguish drugs of good quality from such as are adulterated, or in other respects inferior, are in their selection guided chiefly by the price, purchasing the cheapest articles in the market. By this means they are enabled to undersell the regular Chemist and Druggist, who, if he pays proper attention to quality, cannot compete with such opponents; and is often obliged, in order to gain a mere subsistence, to meet in some degree the demand for cheap medicines. By this means not only is the respectable Chemist injured and deprived of a proportion of his legitimate business, but injury is inflicted on the public by the circulation of inferior drugs in the market—the inevitable result of a ruinous competition in price, among persons many of whom are quite incapable of judging of the quality. Nor is this the only evil resulting from such unrestricted traffic. Besides salts, senna, sulphur, and other innocuous medicines, poisons in general are comprised in this competition; preparations of opium, child's cordial, and a variety of other dangerous substances are habitually compounded and sold by persons quite incompetent to perform *with safety to the public* this responsible duty. We have on several occasions alluded to the fatal results arising from this circumstance, especially in the manufacturing districts, where the poisoning of children is a frequent occurrence: and it has been proved that these abuses are carried on to the most reckless extent by persons who are not regular Chemists and Druggists.

We are informed that in some country towns containing only one Chemist there are five or six chandlers' shops in which Medicines are sold by persons who have no pretensions to Pharmaceutical qualification. In many places a majority of the venders of drugs are of the same class, and in some instances the shops of these parties are made to resemble those of the Chemists, so that the public have no means of distinguishing the legitimate Chemist from the ignorant pretender.

These being the abuses chiefly prevailing in the country, a prohibition merely against dispensing prescriptions would be of little or no service in such localities, and the restriction as to the assumption of the name of Chemist and Druggist would be but a partial remedy if the sale of Medicines by unqualified persons were legalized by a specific exception in the Bill.

We admit that it is not easy to find a complete and effectual remedy, but it is our duty to use every effort, and to consider the subject in all its bearings. In legislating with reference to any particular class of the community, we must always recollect that the object of legislation is the welfare of the public. The Pharmaceutical Society, or any other voluntary association, may with propriety exercise a watchful care over the general interests of its members, but the Legislature can only recognise such claims so far as may be found consistent with the welfare of the public at large. It is on public grounds, therefore, that we must advocate the kind of restriction which may be desirable, carefully avoiding any argument appearing to indicate a desire to establish a monopoly, which, in the present age of "free trade" would not be tolerated.

Sir James Graham has always, in reference to this subject, opposed the general principle of restriction, contending that the public should be unfettered in this respect, admitting at the same time that the law should prohibit the fraudulent assumption of any name, title, or qualification. In the sale of Medicines, it would be difficult to protect the public against the evils and dangers under consideration without carrying the prohibition rather further, and this is a subject which demands the most serious consideration of the Profession as well as the Legislature.

THE DANGER OF QUACKERY.

"Here lies the water; good: here stands the man; good: If the man go to this water, and drown himself, it is, will he, nil he, he goes; mark you that: but if the water come to him, and drown him, he drowns not himself."—*Hamlet*, Act v, Scene 1.

We are fully sensible of the great benefit to be derived from the *judicious* application of water internally and externally, warm or cold, according to circumstances, as a means of preserving health or alleviating certain slight derangements of the constitution. But water, used as a substitute for Medicine, and administered *ad libitum* and indiscriminately, becomes a dangerous weapon in the hands of unqualified persons.

The case of Mr. Dresser, at the establishment at Sudbrooke Park, should be a warning to those who are labouring under the monomania respecting the water cure, believing that this element is a panacea for all disorders. In the above case a verdict of manslaughter was returned by the jury at the Coroner's Inquest, and the "Doctor"(Mr. Ellis) took his trial at the Central Criminal Court on the 20th of June, but was acquitted. In the latter verdict we fully concur, as we consider that in this particular case the responsibility rested with the patient himself, and that a verdict of *felo-de-se* would have been more appropriate than one of *manslaughter*.

It appears that the patient, who was a personal friend of Mr. Ellis, understood what is called the "water cure," and had great faith in its efficacy. He placed himself under the care of Mr. Ellis, with the determination of trying the "water cure," and declined to call in a Medical man, although the proposition was made to him. Moreover, he was not taken into the establishment on the usual terms as a patient, but went as a visitor, paying nothing for the accommodation and attendance, which were freely given by the "doctor." The most careful attention was bestowed, and every advantage was afforded which the establishment could furnish. Baths were at his service twice or thrice a day, wet blankets in the interval. If he complained of pain in his chest or uneasiness in the head, a wet cloth was always ready. No trouble was spared to preserve his life by means of "water cure." But this incessant care and attention produced no benefit; the patient became more feeble and his extremities cold, and within four days of his admission to the establishment he died. We contend that the patient was reponsible. He knew that Mr. Ellis was not a legally qualified Medical Practitioner—he knew the nature of the system on which he relied, and persisted in adhering to it to the last. If a Medical man had been present, he might have detected the symptoms of arrested circulation, resulting, in all probability, from the excessive use of tepid applications in a constitution weakened by previous disease. Mr. Ellis should not be blamed because he failed to make this discovery. Such knowledge as he possessed he applied with the utmost assiduity; but Medical knowledge, being a branch of education quite distinct from the "water cure," did not come within his province. If patients, when suffering under serious disorders, entrust their lives to the proprietor of a bathing establishment, giving orders themselves for the usual treatment to be applied, the person who executes these orders should not be held responsible, unless it can be proved that the patients are *non compos mentis.*

If, however, the proprietor of a bath exceeds his legitimate province, by undertaking, as a matter of business, to cure various disorders, superseding the regular Medical man, and prohibiting the use of ordinary remedies, then, in the event of a fatal result, the case would be very different from that under consideration.

ROYAL COLLEGE OF CHEMISTRY.

THE first stone of the projected Laboratories of this Institution was laid on the 16th of June, by his Royal Highness Prince Albert, in the presence of the Council, Members, and a large assembly of noblemen and gentlemen. After the performance of the ceremony, the Earl of Clarendon addressed the assembly in a very eloquent speech, in which he alluded to the rapid progress of Chemistry on the Continent, and the importance of the science in all its departments in relation to medicine, the arts, agriculture, and civilization in general. His lordship contrasted the rapid strides of Continental Chemistry with the comparatively slow progress which the science has made in this country, which latter he attributed to the want of encouragement and opportunities for study—a deficiency which would be supplied by the Royal College of Chemistry and its Laboratories, the first stone of which had just been laid.

The Bishop of Oxford made some very appropriate observations on the occasion, demonstrating the advantage of science, when properly cultivated, in promoting religion, by extending far and wide a knowledge of the beneficence displayed in the Creation.

His Royal Highness, in conclusion, expressed the satisfaction he felt in promoting the cause of science by assisting in the establishment of an institution which he felt persuaded would effect much good, and the interests of which he would at all times be glad to promote by any means in his power.

TRANSACTIONS
OF
THE PHARMACEUTICAL SOCIETY.

ABSTRACT OF THE SECOND LECTURE ON CRYSTALLOGRAPHY.

BY C. BROOKE, ESQ., M.B., CANTAB.

THE six primary forms—the Cube, the Square Prism, the Right Rhombic Prism, the Oblique Rhombic Prism, the Doubly Oblique Prism, and the Rhomboid, were described at the conclusion of the last lecture, and their characteristic differences pointed out; an attention to which will in many instances materially assist the student in determining the primary form. In some substances, however, the character of the crystal is masked by a disproportionate development in particular directions: thus the crystals of tartaric acid usually present a triangular shape, the relation of which to the primary form is by no means obvious; and the Rochelle salt commonly occurs in half prisms. In some other instances the occurrence of analogous modifications on dissimilar edges and angles gives an appearance of symmetry to the crystal that does not really exist; in these and many other cases the primary form can only be determined by measurement of the angles at which the planes or faces of the crystal are inclined to each other, for which purpose two instruments have been devised.

The Goniometer of Carangeau consists of two small straight bars of metal crossing each other, and moveable on a pin by which they are united. In using this instrument, the shorter arms are closely applied to the two surfaces, the mutual inclination of which it is proposed to measure. The pin is then applied to the centre of a graduated semicircle, and the angle between the longer arms, which is manifestly equal to that between the shorter ones, is determined. The results obtained by this instrument are, however, very uncertain; and if the surfaces to be measured are very small, it is wholly inapplicable.

Wollaston's Reflective Goniometer is a far more perfect instrument: by this the inclination of faces, of which the area is less than 0,00001 inch, may be correctly determined. This instrument consists of a graduated circle moveable in a vertical plane; to the centre of this the crystal is attached by a moveable arm, capable of being so adjusted that the edge of the crystal, at which the planes forming the required angle meet, may coincide with the axis of the circle. Two signals are placed at the distance of a few feet from the instrument, nearly in the vertical plane of the instrument, and the crystal turned on the axis of the circle until one of the signals seen by reflection from a surface of the crystal appears to coincide with the other seen directly. The graduated circle, together with the crystal, is then moved in its own plane, until a similar coincidence of the signals is obtained from the second surface; the angle through which the circle has been moved, and which is equal to the required angle, is then ascertained. For a more particular description of this instrument, the reader is referred to either of the works before mentioned.

Having thus described the method of determining crystalline forms, it will be necessary to notice some of the leading peculiarities of crystallization.

In many of the observed secondary forms, the relative dimensions of the surfaces bear no proportion whatever to those of the primary from which they are derived. The particles of some substances have a tendency to be deposited in the direction of a plane, whence tabular or laminated crystals result, as in naphthaline and benzoic acid; in others there is a tendency to linear deposition, producing fibrous or acicular crystals, as in caffeine and hydrochlorate of morphia. The salts which are sparingly soluble frequently yield very minute crystals: gallic acid and disulphate of quinine are examples of this kind; while those which are freely soluble in hot water, as the sulphate of copper, and alum, deposit on cooling some of the most perfect artificial crystals that can be obtained. We are, however, at present wholly unacquainted with the circumstances on which the character of crystals depends; for in some instances crystals of a totally different character, as regards the relative dimensions of their surfaces, have been obtained at successive periods from the same solution.

In some forms of crystals, particularly those of which the Cube and the Rhomboid are the primary, a variety is occasionally observed in the existence of only half the number of faces belonging to any particular modification, that the law of symmetry requires. These are called *hemihedral* forms. These hemihedral forms are *parallel* or *oblique*, according to the relative position of the existing and omitted faces. The pentagonal dodecahedron is an example of the former kind, and the tetrahedron of the latter. As the tetrahedron contains half the planes by which the octahedron may be derived from the Cube, it has by some been called the *hemioctahedron*. Hemihedral forms are of frequent occurrence in quartz; and a remarkable connecting link between the form and optical properties of crystals exists in the observed fact, that crystals of this substance, having right or left handed hemihedral forms, exhibit respectively right or left handed circular polarization.

Intersected and twin crystals occasionally present a source of embarrassment to the student. Of the former, the staurolite amongst natural crystals, and the sulphate of potash amongst the artificial, may be cited as examples. In the staurolite two crystals generally intersect each other, forming a cross, as the name implies; in the sulphate of potash three crystals are combined, forming an apparently regular double six-sided pyramid.

To twin crystals the term of *hemitrope* was applied by Haüy, because they may generally be conceived to result from cutting a crystal in half, and turning one portion half round on the other. The plane common to the two portions of the crystal is called the *twin* plane, and is parallel either to one of the primary planes, or to a secondary plane resulting from some simple law of decrement. These crystals may frequently be recognised by the existence of notches, called *re-entering angles*, or by lines on the surface which point out the position of the twin plane.

Occasionally substances are found naturally crystallized in a form that does not belong to themselves, but to some other compound of the same base: thus, crystals of oxide of iron are found having the form of sulphuret or carbonate of iron. In these it appears that the crystal must have undergone a chemical change unaccompanied by change of form; these are called *epigène* crystals. Sometimes, also, substances not possessing a crystalline structure are found in the form of regular crystals; they must be considered as only casts of the crystals they represent, and are called *pseudomorphous*. These accidental formations, however, belong more to the province of the mineralogist.

There are some natural as well as artificial productions, that occur in two distinct forms; nor do we possess any knowledge of the causes which determine the assumption of one or other of these forms. For example: arragonite and carbonate of lime are chemically the same, though belonging to different primary forms; and the crystals of sulphate of nickel, if deposited from an acid solution, are square prisms; but if from a neutral solution, they are right rhombic prisms. Such substances are said to be *dimorphous*.

The general outline of the subject which it has been the object of these Lectures to give, would be incomplete without some allusion to the theory of *Isomorphism*, to which the attention of some Chemists has of late been much directed. Neither our space nor the time devoted to the Lecture will allow more than a statement that many groups of Chemical substances, having the same crystalline form, are found to enter into analogous combinations, which also respectively present the same form; and that some other groups have been observed to enter into similar combinations, having very similar crystalline characters: under these circumstances the bodies are said to be *Isomorphous*, of this the salts of phosphoric and arsenic acids afford a remarkable example.

An attentive examination of the parallelisms existing between the various edges of a crystal in very many instances affords a ready indication of the relation of the secondary planes to each other, and of their laws of decrement. As, however, this department of the subject cannot be further elucidated without the aid of diagrams, our readers are again referred to *Enc. Metr.* Art. CRYSTALLOGRAPHY. Those who are a little further advanced in mathematical knowledge, will find this and other general propositions investigated with great perspicuity and elegance in the treatise of Professor Miller.

The Lecture was concluded with a brief explanation and illustration of the method of drawing crystals; of which a detailed account will be found in the works above-mentioned. The general principle of the method may be stated to be that of determining the position in perspective of the various edges, by the lines of intersection on a much larger diagram than that intended to be drawn, and then placing these lines by parallels on a diagram of the required size drawn beneath; by these means a sufficient degree of accuracy in the relative position of the edges may be obtained.

ELECTION OF THE PRESIDENT AND OTHER OFFICERS OF THE PHARMACEUTICAL SOCIETY.

AT a Meeting of Council, held on Wednesday, the 6th of June, being the first meeting of the Council after the Anniversary, the following officers were elected for the ensuing year:—

Mr. JOHN SAVORY	*President.*
Mr. T. N. R. MORSON . . .	*Vice-President.*
Mr. RICHARD HOTHAM PIGEON	*Treasurer.*
Mr. G. W. SMITH	*Secretary*
Mr. THEOPHILUS REDWOOD. .	*Librarian and Curator of the Museum.*

PHARMACEUTICAL MEETING,

JUNE 10th, 1846.

MR. MORSON, VICE-PRESIDENT, IN THE CHAIR.

A paper was read

ON THE MEDICAL AND ECONOMIC PROPERTIES OF THE RHIZOPHORA MANGLE, OR MANGROVE TREE.

BY W. HAMILTON, M.B

AMONG the vast variety of vegetable wonders with which the happy regions within the tropics so richly abound, nature presents few more worthy of attention or admiration than the Rhizophora mangle, or black mangrove of the English islands, the mangle colorado of the Spaniards, and the mangle, or *paletuvier* of the French; a tree totally distinct from the white mangrove, which belongs to the genus Conocarpus.

The black mangrove is a tree frequently of imposing stature, attaining an altitude of from thirty to fifty or more feet, and occupying marshy situations in the vicinity of the sea, as at the bottom of English Harbour, Antigua, and near the mouth of the little river which empties iself into the harbour at Cape Henri, Hayti. Its roots rise in the form of arches above the muddy soil in which it grows, and afford attachment to myriads of small but delicious oysters, which are left bare during the efflux of the tide, giving rise to the popular fable of oysters growing on trees, which, with the exception of their not being fed by, but merely adhering to the tree, is literally true. These oysters make a most incomparable soup, of which I once partook at the house of an American merchant at Cape Henri.

The shade of these trees affords harbour during the day to innumerable swarms of mosquitoes, which nestle on the under surface of the leaves, and infest the houses of those who have the misfortune to live in the vicinity of a mangrove swamp during the night.

But in the economy of nature the mangrove performs a most important part, wresting annually fresh portions of the land from the dominion of the ocean, and adding them to the domain of man; this is effected in a twofold manner, by the progressive advance of the roots, and by the aërial germination of the seeds, which do not quit their lofty cradle till they have assumed the form of actual trees, and drop into the water with their roots ready prepared to take possession of the mud in advance of their parent stems, and repel to a farther and perpetually increasing distance the invasion of the water. The progression by means of the roots is effected by fresh roots which issue from the trunk at some distance above the surface of the water, and arching downwards, penetrate the mud, establishing themselves as the pioneers of fresh invasions of the retiring element. In this manner, the plants soon after their descent from their parent trees, continue, during their early years, to advance steadily forward till they have attained a height of about fifteen feet, and gained a position considerably in advance of their parent trunks. After this fewer additions are made to the roots, but the head begins to expand in every direction, spreading its branches on all sides. These branches, in their turn, send down long slender roots, like those of the banyan fig tree (*Ficus Indica*) which, rapidly elongating, descend from all varieties of height, and reaching the water, penetrate the mud, becoming in time independent trees; thus a complicated labyrinth of vegetation is at length formed, serving to arrest the particles of soil washed down from the interior, these, by their accumulation, raise the level of the ground, till at length what had been water, is converted into a saltmarsh; and what had been a saltmarsh, becomes progressively dry land, fit for the cultivation of man, and teeming with fertility from its copious intermixture with the exuviæ of marine animals and vegetables.

For a description of the singular structure and form of the fruit, so wonderfully adapted to the habits of the plant, and the important purposes for which it appears to have been created, I must refer the reader to the instructive and highly interesting details of Jacquin, as such details would be inconsistent with the objects of the *Pharmaceutical Journal*, and occupy an unreasonable portion of its space.

Almost every part of the mangrove—the bark, roots, and the fruit more particularly—abounds in an astringent principle, which is successfully applied to the purposes of tanning, and as the tree is so abundant within the tropics, it might be worth the while of some practical speculator to make an extract on the spot, and introduce it into the English market for the use of the tanners and dyers.

For external application, in arresting hæmorrhage and disposing malignant ulcers to assume a healthy action, a decoction of the bark has been found most effectual by Dr. Barham, who informs us in his work that he had a son " that was extraordinarily full of the confluent small pox, the soles of whose feet separated, and came off like the sole of a shoe, and left his feet raw, and so tender that he could not set them upon the ground, upon which he sent for some of the *tan fat*, or liquor of this bark, such as they tan their leather with, and added a little alum, and boiled it up very strong, with which he bathed his feet every day, and in about a week's time his feet were as hard and firm as ever, and he was able to walk about without shoes on."

For tanning, the mangrove is said to be infinitely superior to oak bark, completing in six weeks an operation which with the latter occupies at least six months, and the sole leather so tanned, is said to be more durable than any other.

Piso, in his *History of Brazil*, recommends the toasted root as an application to relieve the pain of wounds inflicted by the sting of a fish which he calls *nigui*, but what this fish is I know not—possibly the sting-ray so common in the tropical seas. It should be applied warm.

14, *Octagon, Plymouth.*

NOTE ON THE
TESTS OF THE PURITY OF BALSAM OF COPAIBA.

BY MR. REDWOOD,

Professor of Pharmacy to the Pharmaceutical Society.

Some observations which have recently been made at a meeting of this Society, with reference to the adulteration of copaiba, especially that used for filling the cheap capsules, have induced many of our members to examine their copaiba capsules with the view of determining whether or not the contents were genuine. In these examinations the ordinary tests, mentioned in works on Materia Medica, have of course been resorted to, and in some instances results have been obtained indicating, according to the tests used, that the copaiba was not genuine. I have been applied to for my opinion in two or three cases of this kind, and after examining several samples of copaiba obtained from different sources, and trying the action of all the tests upon them, I have come to the conclusion that no satisfactory method, applicable in all cases, for determining the purity or impurity of this oleo-resinous substance by the application of a simple test, has hitherto been pointed out. Some of the tests which appear to have been most relied upon, I believe to be quite valueless, and I have no doubt that many samples of copaiba have been condemned as impure on very insufficient data.

In obtaining the results which I am about to describe, I have used the three following specimens of copaiba, but some of the experiments were repeated on several others:—

1. Part of a specimen in our Museum, which was received about two years ago from one of our members, Mr. Goodbarn, of Rio de Janeiro. It was taken by Mr. Goodbarn himself,

from a tree in a primeval forest, in the district of Macahé, about four days' journey from the city of Rio de Janeiro, on the 5th of July, 1843. The tree was at the same time cut down, and some of the wood, bark, and leaves were sent with the specimen. On comparing these with Hayne's plates, they were found to correspond with those of Copaifera trapezifolia. Mr. Goodbarn described the tree as having been one hundred feet in height, and about three and a half feet in diameter. This is probably one of the best authenticated specimens of genuine copaiba in this country.

2. A specimen of copaiba taken from some capsules, said to have been imported from France. This specimen was brought me for examination by a merchant in the city. It had been previously examined and condemned as impure, but I believe it to be genuine and very good.

3. A specimen of good commercial copaiba obtained from a wholesale house.

The following are the tests which I have applied to these specimens, together with the results :—

A. The addition of two parts of absolute alcohol to one of copaiba has been recommended as a means of ascertaining whether any substance insoluble in alcohol has been mixed with the copaiba. This is one of the tests given in the *Edinburgh Pharmacopœia;* it is stated that genuine copaiba is perfectly soluble in the above quantity of alcohol.

On applying this test to the specimens, a perfect solution was formed with No. 1, but not with either of the others. After adding the alcohol, which was of specific gravity .795, to No. 2 and No. 3, a white flocculent substance remained undissolved, and ultimately settled to the bottom. This substance was collected, and appeared on examination, to be the viscid resin of the copaiba, which, as met with in many specimens, is scarcely, if at all, soluble, either in rectified spirit or in alcohol. I applied this test to several other samples of copaiba, which I believe to have been perfectly genuine, and obtained results similar to those afforded with Nos. 2 and 3.

The use of this test in the manner described may therefore lead to error, as it indicates the presence of impurity in cases where none exists. But this is not the only objection to this test. The evidence it affords of the presence or absence of substances which are insoluble in alcohol, is very imperfect. It is an error to conclude that a substance insoluble in alcohol, when added to that liquid alone, will therefore be insoluble if it be added when mixed with other bodies. The balsam of copaiba itself affords an illustration of this statement. This oleo-resinous substance consists principally of volatile oil and resin, which may be easily separated. The volatile oil is but sparingly soluble in alcohol, yet when mixed with the resin it is freely soluble. The same may be said of oil of turpentine and some of the fixed oils, which by themselves are either slightly, or not at all soluble in spirit, but which nevertheless become freely soluble when mixed with other substances, such as camphor, resin, oil of lavender, and other volatile oils. Some of the resins, also, which, alone, are but little soluble in alcohol, may be readily dissolved when mixed with camphor, volatile oils, &c. The fact of an oleo-resinous substance being freely soluble in alcohol, is therefore no proof that it contains nothing mixed with it which by itself would be insoluble, or but slightly soluble in that menstruum.

B. A solution of one part of hydrate of potassa in two parts of water has been recommended as a good test. It is stated that such a solution, mixed with nine parts of genuine copaiba, will form a transparent mixture, which will continue clear after moderate dilution with water or rectified spirit; but if there be from three to six *per cent.* of fixed oil present, the mixture will be opaque.

This test, when applied to sample No. 1, formed a mixture which continued opaque for several days; it then separated into two strata, the upper stratum being oily or saponaceous and clear, and the lower stratum aqueous, clear, and colourless, and forming about one-tenth of the mixture. On shaking the tube, the mixture became again opaque; when diluted with water, it was rendered perfectly milky; the addition of spirit rendered it rather more clear, but left it still slightly opaque.

The same test, applied to specimen No. 2, formed an opaque mixture, which, after standing for some days, separated into three strata. The top stratum, constituting nearly one-half of the whole, consisted of the volatile oil of copaiba; the middle stratum appeared to consist of the resin and potash in the form of a soap; while the lowest stratum was aqueous, clear, and colourless. On shaking the tube, the mixture became again opaque, and this continued after dilution with water or spirit.

The same test, added to specimen No. 3, formed a mixture that was but very slightly opaque. No separation took place in it after standing for several days, but it still retained a slight degree of opacity. On adding a little more of the copaiba to the mixture and shaking them together, it became perfectly clear, thus proving that the quantity of solution of potash first added was rather more than the copaiba was capable of forming a clear mixture with. After obtaining the clear mixture in this way, it became quite opaque and milky on diluting it with water, and slightly opaque on adding spirit to it.

Finding that specimen No. 3 formed a clear mixture when rather less than the quantity specified of the solution of potash was added, I treated the other specimens with the solution of potash in several different proportions. No. 2 formed a mixture very nearly transparent, when only one-third of the specified quantity of the solution of potash was used; but a separation took place on letting it stand for some hours. No. 1, when mixed in this and several other proportions, still continued opaque.

It is very evident, therefore, that no satisfactory inference can be drawn, with reference to the purity of copaiba, from the application of this test.

C. Solution of ammonia of sp. gr. .960, has been recommended as affording a good test of the purity of copaiba. It is stated, that if one part of such solution of ammonia be added to three or five parts of genuine copaiba, the mixture will be clear, presenting a similar appearance to that of the copaiba before the admixture. If the mixture be opaque, it is said to be a sign of adulteration in the copaiba.

I believe this test has been more used and relied on than any other; but Dr. Christison has objected to it, on the ground that copaiba may be mixed with a sixth of its weight of castor oil without affecting the action of the test. I have found it liable to an objection of a different character, as the following experiments will show:—

Specimen No. 1, when treated with the ammonia as directed, formed an opaque mixture, which continued so after standing for several days. The ammonia was added in a great many different proportions to this specimen, but in all cases the mixture was opaque.

Specimen No. 2, treated with the ammonia, formed at first an opaque mixture; after standing for two or three days, it separated into three strata in the same manner as the mixture of the same specimen with the solution of potash.

Specimen No. 3, when treated in the same way, formed a perfectly clear and homogeneous mixture, which retained this character after standing for a considerable length of time.

This test, therefore, in addition to the objection stated by Dr. Christison, may indicate impurity where none exists.

D. Pure copaiba is said to dissolve a fourth of its weight of carbonate of magnesia, with the aid of a gentle heat, and to continue translucent, the presence of a small proportion of any fixed oil being indicated by the product being opaque. This, again, is one of the tests given in the *Edinburgh Pharmacopœia.*

This test was tried on specimens 1, 2, and 3, and the results were nearly the same in each case. After adding the magnesia, applying the heat of a water-bath for about half-an-hour, and stirring the mixture from time to time, on allowing them to stand for a few minutes, a portion of the magnesia settled to the bottom of each of the tubes in which the mixtures were made. The fluid, or semi-fluid, portion might probably be said to be *translucent*, but I presume the test would leave as many degrees of impurity undetected as there may be degrees of translucency, for, surely, a more indefinite indication could hardly be conceived. After standing for several days, there was found at the bottom of each tube a saponaceous mass, constituting from one-third to one-half of the whole, and a clear oily fluid above. Specimen No. 3 gave the largest quantity of the saponaceous mass, and specimen No. 2 the smallest.

This test is as valueless as those previously noticed.

E. The last test to which I shall allude is probably the worst of all. It is stated, that if one-part of oil of vitriol be triturated with three-parts of pure copaiba, a plastic reddish mass will be formed; but if the copaiba contains castor-oil it will be scarcely or not at all coloured, and will acquire the consistence of turpentine.

I need hardly say that this statement is erroneous, and the test of no manner of value.

Having thus proved the worthlessness of these methods of detecting impurity in balsam of copaiba, it becomes an important question to determine whether there is any other less exceptionable method.

The consideration of this question involves a reference to the natural history and chemical composition of the different varieties of copaiba met with in commerce. What is the substance to be tested? Is it always the same, or do different specimens of it differ in their physical and chemical characters? The answers to these questions will be found to explain the discrepancies already noticed in the action of the foregoing tests on different samples of copaiba.

The substance called Balsam of Copaiba, is an oleo-resinous exudation, obtained from several species of the genus Copaifera, by making incisions into the trunks of the trees. It possesses most of the chemical characters of common turpentine. By distillation, or saponification, it may be resolved into a volatile oil and a hard resin. These exist in very different proportions in different samples of copaiba, depending, probably, upon the species of Copaifera from which it has been obtained, the soil and climate in which the trees have grown, and the length of time during which the copaiba has been kept. I have found the quantity of volatile oil to be twice as great in some samples as in others, and to this difference is chiefly to be ascribed the dissimilar action of the tests upon it. There is probably no simple test that could with any satisfaction be applied for the detection of impurities in a substance which is itself subject to such great variations in composition.

The only method that appears to me to be at all satisfactory, of examining a sample of copaiba, with the view of estimating its purity and value as a therapeutic agent, is, first, to resolve it into its proximate constituents, and then to examine these separately, with reference to their physical and chemical characters. The volatile oil is generally considered to be the principal, if not the only constituent of copaiba, which possesses any medicinal activity. This may be separated by distilling the copaiba with water, and its physical characters are so well marked, that it is difficult to conceive an adulteration that would not be readily detected. The resin would of course be at the same time separated by the above process of distillation, and the consistence and other characters of this part of the constituents of the copaiba, will afford the best means of judging of the presence or absence of any nonvolatile impurities.

The proportion of volatile oil, in different specimens of copaiba met with in commerce, is in some cases as low as 30, in others as high as 60 per cent. The specimens No. 1 and No. 2, alluded to in the foregoing experiments, contain nearly 60 per cent. of volatile oil; they are therefore unusually rich in the most active constituent of the copaiba. This volatile oil has the same ultimate composition as oil of turpentine, with which it closely coincides in the action produced by most chemical agents; but its taste, smell, and other physical characters, afford means of distinguishing it from that or any other substance with which it is likely to be mixed.

The proportions of resin, in different specimens of copaiba, also vary to about the same extent as those of the volatile oil, the quantity being greatest where the quantity of oil is smallest, and *vice versa.* The resinous part of copaiba differs but little from common resin, obtained from turpentine. It is considered to possess but little medicinal activity, probably not more than common resin.

17, *Bloomsbury Square.*

The Chairman then proceeded to distribute the prizes which had been awarded at the examinations in the classes of Chemistry, Materia Medica, and Pharmacy.

The following are the Questions which were submitted to the candidates:—

CLASS OF CHEMISTRY.

[*The numbers to the* right *indicate the relative values of the Questions.*]

1. Detail the method of ascertaining the specific gravity of a salt or organic compound, soluble in water 50

2. Describe the mode of correcting the volumes of gases for pressure and temperature. 50

3. Give a description of carbonic oxide, carbonic acid, light carburetted hydrogen, and olefiant gas, with the methods of analysis and the proof of the composition asserted . . . 100

4. Explain the law of Electrolytic Decomposition . . 50

5. Explain and illustrate the law of Isomorphism . . 50

6. Give a description of the compounds of chlorine and oxygen, including the chemical history of the bleaching salts. . . 100

7. Give the distinctive characters of the salts of baryta, strontia, lime, magnesia, alumina, and oxide of zinc . . 25

8. Give the distinctive characters of the salts of manganese, iron, nickel, cobalt, and copper 25

GEO. FOWNES.

CLASS OF MATERIA MEDICA.

1. What are the chemical tests for the detection of the presence and of the purity of Gamboge? What vegetable product bears some resemblance to this gum-resin?—and how would you distinguish them?

2. Name the officinal seeds whose albumen is poisonous. State their generic and specific names, and refer them to their appropriate natural orders.

3. What are the respective microscopic characters of Wheat-starch, Rice-starch, and the starch of Zingiberaceæ? What zingiberaceous starch is found in commerce? State its ordinary name, the plant yielding it, and the place of its production.

4. Enumerate the plants yielding the several sorts of Sarsaparilla found in commerce—referring each sort to its respective plant, as far at least as has been ascertained. In what respects do Lima and Jamaica Sarsaparilla agree? What are the characteristics of good extract of Sarsaparilla?

5. What are the coniferous plants yielding the turpentines from which the oils of turpentine of French and English commerce are respectively obtained? How are the French and English Oils distinguishable?

6. By distillation, balsam of Canada yields a volatile oil and a residual resin. Are these substances products or educts? State the reasons for your opinion?

7. What is the readiest chemical means of distinguishing the Camphor of *Camphora officinarum* from the Camphor of the *Dryobalanops?*

8. Name the substances respectively labelled A. B. C. D. E. F.

9. Enumerate the diagnostic botanical characters of *Compositæ;* and mention the officinal plants obtained from it, referring each to its appropriate section, and stating its generic and specific names? Mention the prevailing chemical constituents, and the medical properties of this family?

10. What are the natural order, generic and specific name, place of production, chemical composition, and medical properties of Matico?

11. How would you detect the presence of Chicory in coffee, and of roasted grain in Chicory?

12. What is the composition of the deposit which falls from the decoction of Cinchona as it cools?

JONATHAN PEREIRA.

CLASS OF PHARMACY.

1. What are the specific gravities of "*liquor ammoniæ,*" and "*liquor ammoniæ fortior,*" of the Pharmacopœia? What proportions of ammonia do these preparations respectively contain.

2. What is the proportion of mercury in *blue pill;* of opium in *pulvis ipecacuanhæ compositus;* and of calomel in "*pilulæ hydrargyri chloridi compositæ?*"

3. What is the chemical composition of the "*spiritus ætheris nitrici*" of the London Pharmacopœia? What proportion of nitrous ether does this preparation generally contain? What difference is there between this and the preparation ordered under the same name in the *Edinburgh Pharmacopœia?* Describe the Edinburgh process.

4. What is the action of *diluted sulphuric acid,* and of the *strong oil of vitriol,* with and without the application of heat, on iron, copper, zinc, and mercury? Represent the decompositions which occur by diagrams.

5. Describe the process for preparing the *Rochelle salt.* What is the composition of this salt, represented by its chemical symbol? If a salt were given you, purporting to be *Rochelle salt,* how would you determine whether it be such, and how would you proceed to detect any adulteration or impurity in it?

6. State the process of the Pharmacopœia for preparing *disulphate of quina,* and give an explanation of every part of the process.

7. Describe the composition of the ingredients used in making *emplastrum plumbi*—what are the reactions which occur during the process, and what are the products resulting?

T. REDWOOD.

The Prizes and Certificates of merit were awarded as follows:—

CHEMISTRY.

PRIZE.

Mr. S. J. **Baxter**, 198, High Holborn.

CERTIFICATES OF MERIT.

Mr. **Henry Owen Huskisson**, Swinton Street, Gray's Inn Lane.
Mr. **Alfred Tylor**, Warwick Lane.
Mr. **John C. Major**, at Mr. Lamplough's, 88, Snow Hill.

MATERIA MEDICA.

PRIZE.

Mr. **Geo. Wm. Shrubsole**, at Mr. Novis's, 60, George Street, Portman Square.

CERTIFICATES OF MERIT.

Mr. **Henry Owen Huskisson**, Swinton Street, Gray's Inn Lane.
Mr. **Arthur Edward Windus**, at Messrs. Savory and Moore's, 143, Bond Street.

PHARMACY.

PRIZE.

Mr. **Wm. Wilkinson**, at Messrs. Savory and Moore's, 143, Bond Street.

CERTIFICATES OF MERIT.

Mr. **John C. Major**, at Mr. Lamplough's, 88, Snow Hill.
Mr. **Wm. Huskisson**, jun, Swinton Street, Gray's Inn Lane.

There was a separate examination of the **Laboratory Pupils**, of which the following was the result:—

Prize.—Mr. J. **Stutchbury**.
Certificates of Merit.—Mr. **Alfred Allchin**.
Mr. **William Sumpter**.
Mr. J. **Jones Bancroft**.

DEPUTATION OF THE PHARMACEUTICAL SOCIETY TO THE COLLEGE OF PHYSICIANS.

The President and Censors of the Royal College of Physicians received the Deputation of the Pharmaceutical Society, again on the 19th of June, and the proposed Pharmaceutical Bill was discussed at some length. The deliberation had reference chiefly to the name and functions of the proposed College of Pharmacy, the constitution of the Board of Examiners, the arrangement respecting the Examinations, and the manner of enforcing the provisions of the Act so as to ensure the efficient performance of the duties of the Pharmaceutical Chemist.

The President and Censors as before reminded the Deputation that the interview must not be considered a meeting with the College; but stated that if the suggestions now made should be adopted by the Pharmaceutical Society, the Bill in its amended

form should be laid officially before the College of Physicians for consideration.

As this subject will occupy the attention of the Committee, and subsequently of the Council, before any decision can be come to respecting the proposed alterations, the publication of further particulars must be differed until after the next meeting of Council.

LIST OF MEMBERS,
ASSOCIATES, AND APPRENTICES (*continued*).

ELECTED IN JUNE.

MEMBERS.

ATHERSTONE	. Beech, Joseph, Market Place
BISHOP AUCKLAND .	. Hull, Thomas
BRISTOL	. Crocome, Joseph H. 55, Temple Street
CHESHAM	. *Allan, William, High Street
HAWKHURST	. Doubell, James
LONDON	. Peacock, Henry, 67, Golden Lane
MANCHESTER	. Brown, Leonard F., Great Ducie Str.
	Brown, William S., 103, Market Str.
NEWCASTLE	. Monro, Henry, 20, High Street
SHEFFIELD	. Whitehead, E., 37, Fargate
SOUTHPORT	. Walker, William H.
WATH	. Hick, Allan, High Street
YARMOUTH	. Davy, Frederick, King Street

MAJOR EXAMINATION.

Hooker, Ellis	Exeter

MINOR EXAMINATION.

Blelock, Hugh Jones	260, Tottenham Court Road
Taylor, Frederick Cottle . . .	25, New Road, St. George's in the East

REGISTERED APPRENTICES.

APPRENTICES.	RESIDING WITH	TOWN.
Barker, Matthew M. .	Mr. Spence . .	York
Barrs, John A. . .	Briggs and Gamble	Grantham
Crafton, Richard . .	Mr. Crafton . .	Croydon
Dibley, Alfred . . .	Mr. Read . .	Devizes
Essery, William . .	Mr. Hallett . .	Plymouth
Haworth, Rocliffe .	Mr. Rogerson .	Bradford
Hodson, Richard G. .	Mr. Hodson . .	Reading
Hutton, William H. .	Mr. T. Parkes .	Woolwich
Pertwee, Edward .	Mr. Baker . .	Chelmsford
Savory, Thomas Hames	Savory and Co. .	Bond Street
Savory, Charles Harley	"	"
Welch, Charles . .	Farmer and Bird	Worcester
Yates, William . .	Mr. Fisher	Bridgnorth

ORIGINAL AND EXTRACTED ARTICLES.

ON THE NOXIOUS PROPERTIES OF THE ECHITES SUBERECTA, OR SAVANNA FLOWER, AND THEIR ANTIDOTES.

BY W. HAMILTON, M.B.

In the savannas of Jamaica, and the skirts of the woods in most of the other islands, among a vast variety of climbing or rather twining shrubs, various species of Echites are to be met with in considerable profusion, many of which are attractive from the beauty of their flowers. The whole of them abound in a milky sap, possessing qualities which are usually regarded as poisonous. Possibly, however, as in the allied genus Tabernæmontana, almost equally common throughout the Antilles, some species may yet be found, whose milk is not only innocuous, but applicable, like that of the Tabernæmontana utilis, to the sustenance of man and other animals.

Among the more showy of the species of Echites, found in our English islands, is the Echites suberecta, a shrub with a weakly twining stem, supporting itself by means of the bushes, to a height of ten or more feet, and making a beautiful appearance, with its large golden blossoms in the months of July, August, and September: and from that time, according to Jacquin, to the month of March—and not improbably, it might be found also in blossom in some situations during the three remaining months of the year.

I first met it in the vicinity of Scarborough, in the island of Tobago, flowering profusely in the months I have first named; but I have no record of finding it in any other island. In Jamaica, Jacquin speaks of its growing in the town of Kingston; and Lunan says, it is found abundantly in the savannas, where it blossoms throughout the year. It is also abundant, according to Jacquin, in the extensive meadows of the district of Limonade and other parts of Hayti.

The milk of this plant is a most deadly poison, and often fatal to cattle that browse upon it. Lunan states, that he saw two drachms given to a dog, which proved fatal in eight minutes. But its exhibition may be so managed as to sap the constitution by slow and imperceptible degrees, so as, without awakening suspicion, to accomplish its object with greater certainty. Lunan gives the case of a medical practitioner in Jamaica, who was practised upon in this way by a negro woman, who appears, however, to have used it too largely for concealment, as it produced violent griping, nausea, and loss of appetite, followed by convulsive twitchings in various parts of his body, hectic fever, and emaciation. Lunan, on being applied to for his advice, sent him some coccoons of the Fevillea, or *nhandiroba*, spoken of in a former paper, which he directed him to take infused in wine frequently in the course of the day, by which means the deleterious effects of the Echites were counteracted, and health ultimately restored, although it was a long time before the disposition to spasm was wholly subdued.

Dr. Barham gives another remarkable case, in which the effects of this plant were counteracted by the timely exhibition of the expressed juice of the root of the Maranta arundinacea, or arrowroot. It appears that an ignorant negro, on a plantation about a league distant from Spanish town, being at a loss for a cork, employed a piece of the stem of the Echites suberecta, to stop a jar of rum, which was left in that condition, and with some of the leaves which had dropped in, all night. Of this rum some of the negroes partook in the morning, and were, in the course of a few hours seized with a violent vomiting and tremors. An alarm was immediately raised that they were poisoned, and the owner of the plantation hastened, accompanied by the surgeon who attended it, to the spot; but on his arrival he found that some were dead, and another just expiring. Nobody could explain the cause: but somebody present having suggested the arrowroot, it was procured, the juice expressed from the root and administered with the happiest effects. Immediately after drinking the first glassful, the negro, who was at the point of death, revived; the second brought him completely to himself, and saying that he found his heart *boon* after it, he requested more to be given.

Noxious, however, as this juice appears to be, when received into the stomach, it is said by Lunan to be serviceable as a dressing for sores in which maggots have bred.

What then is the nature of the principle which is so noxious in the milky sap of this ornamental plant? and in what manner are its effects counteracted by the coccoons of the Fevillea, and the expressed juice of the Maranta?

The active constituent in the juices of most of the lactescent plants, appears to be either caoutchouc or morphia—and where both these are wanting, as in the celebrated cow-tree of Carraccas, the Euphorbia balsamifera of the Canaries—the Asclepias lactifera of Ceylon—the Tabernæmontana utilis of Demarara, and the Vaccodendron lactiferum of the province of Para—the milk is nutritious.

Is morphia the active constituent of the milk of the Echites, and what is the substance combined with it, which modifies its operation in the manner described by Barham and Lunan?

ON THE MARANTA ARUNDINACEA,
AND ITS APPLICATION AS AN ANTIDOTE TO ANIMAL AND VEGETABLE POISONS.

BY W. HAMILTON, M.B.

THE Maranta arundinacea, or Indian arrow-root, is best known in Europe by the nutritious properties of the farina obtained from its roots, but its celebrity was originally derived from the use said to have been successfully made of it by the Indians of South America, as a corrective of the mischief resulting from the wounds inflicted by poisoned arrows.

For this purpose, the Indians employ both the expressed juice internally, and the root in substance externally, in the form of a cataplasm. What the nature of the poison employed by the Indians to increase the destructive power of their arrows is, has not yet, I believe, been correctly ascertained; but it appears, from Humboldt's account, to have been chiefly, if not altogether, obtained from the vegetable kingdom, one of its sources being a tuberous root, which the credulity of superstitious ignorance represents as never putting forth leaves, and termed by those who could speak Spanish, *raiz de si misma*. It is represented as so dangerous, that the vapours rising from the vessels in which the poison is prepared, prove fatal to those who superintend the operation.

But the poison perhaps which has obtained the greatest celebrity, is that known by the name of *curare*, chiefly manufactured at Esmeralda, near the bifurcation of the Oronoco, the most active constituent of which appears to be obtained from the bark and alburnum of a climbing plant, called by the local name of Bejuco de Mavacure, probably the Strychnos toxifera, or some allied species, of which Kunth has made the following description from specimens, unaccompanied either by flowers or fruit, contained in the herbaria brought to Europe by Humboldt and Bonpland:—

> "Ramuli lignosi, oppositi ramulo altero abortivo, teretiusculi, fuscescento-tomentosi, inter petiolos lineolâ pilosâ notati, gemmulâ, aut processu biliformi (pedunculo ?) terminati. Folia opposita. breviter petiolata, ovato-oblonga, acuminata, integerrima, reticulato-triplinervia, nervo medio subtùs prominente, membranacea, ciliata, utrinque glabra, nervo medio fuscescenti tomentaso, lætè viridia, subtùs pallidiora, 1½-2½ pollices longa, 8-9 lineas lata, Petioli liucam longi, tomentosi, inarticulati."

The poison is obtained from the younger branches, whose size does not exceed four or five lines in diameter, these are scraped with a knife, and the bark bruised on a stone into a fibrous mass of a yellow colour. This mass is placed in a funnel, and cold water poured over it, which, trickling through the fibrous mass, carries with it the yellow poisonous constituent of the sap, which drops slowly for several hours into a vessel placed to receive it. The liquor thus obtained, is inspissated by evaporation; and the proper degree of inspissation ascertained by tasting it frequently during the process, the amount of bitterness increasing with that of concentration. This is unattended with danger, as the poison is only injurious, like that of the viper, when mixed by means of a wound with the blood. This inspissated juice is next thickened by the addition of the glutinous juice of a tree with large leaves, called by the Indians *kiracaguero*, which is brought from a considerable distance; but not being either in blossom or fruit at the time (in the month of May) Humboldt was unable to determine the genus to which it belongs; nor is this perhaps material, as its chief, if not only use, appears to be to give consistence to the poison of the Mavacure. On the addition of this gummy juice to the concentrated infusion of the Mavacure boiling over the fire, the mixture blackens and assumes the consistence of tar, constituting the celebrated curare of commerce, which often sells as high as half-a-crown an ounce, that of Esmeralda and Mandevacà being in the greatest repute.

The flesh of animals killed by means of arrows smeared with this poison, is not at all the worse for the operation, but is, on the contrary, considered to be improved by it. Mixed by means of a wound with the blood, the rapidity of its action appears to be regulated in a great degree, by the size and vigour of the victim; a guan or a curassoa dying in two or three minutes after being wounded, while a pecari or a pig survived for ten or twelve minutes.

It is not my object at present, however, to enter into a discussion of the curious and interesting subject of the poisons of South America, nor to inquire whether their activity arises from the presence of some common principle, which, in some cases, as in that of the curare, produces its effects only by admixture with the blood; in others, as in the case of the savanna flower, is only deleterious when received into the stomach; and in others, as the climber, which yields the deadly poison of la Peca, and the guan of the vicinity of Trinidad de Cuba, when it is taken up by the absorbents. Of the effects of the liana of la Peca, Humboldt gives two examples, one in his own person, in which his hands were benumbed by friction of the twigs between his fingers, and another in the person of an individual employed with him in his experiments, who was similarly benumbed by absorption, although there was not the slightest abrasion of the cuticle. I must now return to the effect of the expressed juice of the Maranta in counteracting the deadly effects of this unknown principle, and restoring the healthy action of the animal system.

The knowledge of this valuable property was obtained from an Indian, who was captured after having wounded an European with a poisoned arrow, and tortured till he promised to counteract its effects, which he accomplished by the aid of this root.

In the paper on the Echites suberecta, I have noticed, on the authority of Dr. Barham, the efficacy of the expressed juice of the root of the Maranta, in counteracting the deadly effects of the poison of that plant when taken into the stomach. And it appears to be equally serviceable in cases of bites or stings of venomous insects or reptiles.

Barham, from whom that narrative was borrowed, relates the case of a lady in Jamaica, who was stung in one of her fingers by a black spider, which, in the short space of an hour, produced inflammation and violent pain of the whole limb, extending to the shoulder, and excited a strong febrile action throughout the whole system, accompanied by symptoms of convulsions, but by the application of this root to the wounded joint, and renewing it from time to time, all these alarming symptoms gave way, and within twenty-four hours from the time of being stung, she was perfectly recovered; and he mentions a second case similarly treated, with a similar result.

Dr. Wright also recommends the external application of the juice of this root in the early stages of gangrene.

In Europe, however, the Maranta is chiefly prized for the nutritive qualities of its amylaceous produce, which is known by the name of *arrow-root* in the English, and *amidon* in the French islands. But, in the amount of this produce obtained from a given weight of the roots, if we are to give credit to the results obtained about forty years since by Mr. Harris, of Jamaica, the Maranta ranks much lower than could have been anticipated. His experiments were made upon five pounds of the roots of the Janipha lœflingii, or sweet cassada, which stands first in his list, the same quantity of the tubers of the Caladium esculentum (ocoes or taniers) the same weight of the roots of the Janipha manihot (bitter cassada, the Yucca amarga of the Spaniards) as much of the full grown but unripe fruit of the Musa paradisiaca or plantain, the same weight of the root of the Dioscorea bulbifera, or Guinea yam, of the root of the Batatas edulis, or sweet potato, of the root of the Maranta arundinacea, and of the full grown but unripe fruit of the Musa sapientum, or banana.

These being well washed and scraped, were grated, in each case, into two gallons of clear rain water, and the whole then filtered through a clean linen strainer, after which it was left to settle; when the amylaceous matter had wholly subsided, the supernatant liquor was carefully decanted and fresh water added, which process was repeated until every foreign substance appeared to be removed; the produce of these several operations was then carefully collected and dried with a temperature of about 110° Fahr., and when dry weighed, in this manner the results given in the following table were obtained:

FROM FIVE POUNDS OF THE	PRODUCE.		
	Ounces.	Drachms.	Cents. Prop.
Root of the Janipha lœflingii	14	1	17.27812
———— Caladium esculentem ...	11	7	14.29686
———— Janipha manihot	11	2	13.90624
Fruit of the Musa paradisiaca	11	1	13.82812
Root of the Dioscorea bulbifera	8	6	10.46674
———— Batatas edulis	8	6	10.46674
———— Maranta arundinacea ...	5	6	6.71874
Fruit of the Musa sapientum	0	0	0.0000

This table exhibits no doubt very unexpected results, since it places the sweet cassada at the very top, and the banana at the lowest place in the list, while the bitter cassada, which seems to be little more than a variety of the sweet, notwithstanding its being the staple material of West Indian bread, occupies two places lower down, and is followed by the plantain, which may almost be regarded as merely a variety of the banana; and the sweet potato and the yam, both of which are considered to be less nutritious than the Maranta, rank above it in the centesimal proportion of their amylaceous produce. Upon what then, do the nutritive properties of these various substances depend? Is it upon a gluten which was overlooked by Mr. Harris in his experiments, or if not, may we not suspect some inaccuracy in the proportion of starch assigned by him to each? It is to be wished that Mr. Harris's experiments were repeated with care, and the list extended to other tropical productions applicable to human sustenance, especially to the roots which yield the farinaceous starch of the South Sea islanders, to the Achira of Chocò, a Canna which has an esculent root, highly esteemed, and to the *tous les mois*, cultivated in Barbadoes, St. Kitts, and the French islands, which bears large tuberous roots, equal in size to the human head, and which is also a Canna, attaining in rich soils a stature of fourteen feet, identical I suspect, with the Achira of Chocò, and provisionally named in consequence, Canna achira, of which I have been unable to procure the blossom. The starch of this last is far superior to that of the Maranta.

14, *Octagon, Plymouth.*

ON AN IMPURITY OCCURRING IN COMMERCIAL AQUA AMMONIÆ.

BY DOUGLAS MACLAGAN, M.D., F.R.S.E.,
Lecturer on Materia Medica.

Some time ago having occasion to add nitric acid to a fluid containing an excess of ammonia, I was perplexed by observing that the liquid assumed a deep red colour passing to purple. As this was a reaction which I had not the least reason to expect in the experiment in question, I suspected impurity in the nitric acid, which had been prepared by myself as a pure reagent, and repeated the trial with the same acid and ammonia, when a similar result followed. Circumstances prevented me from inquiring further at that time into the cause of this, and it had escaped my recollection, until I called at an extensive drug warehouse here to procure some strong aqua ammoniæ, D. ·880. I was then told that if I did not care about having it quite pure, I could have some of great saturating power, but containing some foreign matter like coal-tar, which would render it unfitted for use as a pure chemical reagent; at the same time I was told that the whole of the ammonia (of which I took a few ounces) was not equally thus contaminated. This, recalled to my recollection the circumstance which had previously occurred to myself, and I accordingly subjected this sample to the action of nitric acid but without producing the least trace of the red colouration. I mentioned this to my friend Dr. Anderson, whose recent investigations into the volatile products of coal-tar* were likely to have directed his attention to this matter. I found that he had not observed it, but I speedily showed him the characteristic reaction on a sample of aqua ammoniæ D. ·920, in his own laboratory, which he had procured from the same drug warehouse. Dr. Anderson kindly assisted me in making some experiments to determine the nature of this impurity, and a few minutes sufficed to show that the impurities here were, a considerable amount of the volatile substance called *pyrrol*, discovered by Runge, and a portion of what was probably naphthaline.

The following were the experiments to which this impure aqua ammoniæ, which was quite colourless, was subjected :—

1. The addition of an excess of nitric or sulphuric acid caused a rapid red colouration passing into purple.

2. The ammonia was supersaturated with muriatic acid and a clean shaving of fir wood inserted into the fluid. It speedily became dyed of a rich purple. This is characteristic of pyrrol.

3. A portion of the ammonia was supersaturated with sulphuric acid and distilled. The distilled liquid had a marked odour of napthaline, and crystalline-looking particles, apparently of this substance, floated in it. It was tested by muriatic acid and the fir wood, and gave very strongly the colour characteristic of pyrrol. Pyrrol was considered by Runge to be a base, but it distils over even from a large excess of sulphuric acid. Hoffman, in his investigation of aniline, failed to obtain this substance previously discovered by Runge, but Dr. Anderson, in the researches quoted above, found it in abundance.

4. The residue of the distillation in last experiment, which of course contained all the ammonia in combination with the sulphuric acid, was mixed with a small quantity of caustic potash. The smell of *picoline*, the new base recently discovered by Dr. Anderson (op. cit.) was distinctly perceived. More potash was then added, and the fluid distilled, when the ammonia passed over. It was now again tested for pyrrol, but hardly a trace of it could be detected.

It is easy to see how these impurities come to be present in the ammonia. It is well known that most of the ammonia of commerce is derived from the watery liquor of gas-works, from which it is prepared by converting it into sulphate or muriate, and decomposing the salt so obtained by lime. In the preparation of this impure aqua ammoniæ, it is obvious that this process has not been followed. The manufacturer, in order to save the expense incurred by converting it into sulphate or muriate, has contented himself with procuring it by direct distillation, and thus it contains the other volatile ingredients of the gas liquor.

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* *Trans. Royal Society Edin.*, vol. xvi., p. 2.

It is hardly necessary to say that such aqua ammoniæ is quite unfitted for chemical or pharmaceutical use. It is sold at a lower price than the ammonia of the same strength as it ordinarily occurs in commerce. That which was the subject of the above experiments, I am informed, was procured from England.

I suspected that this impure ammonia might also contain traces of hydrocyanic acid, but none could be detected by the ordinary tests.—*Monthly Journal of Medical Science.*

George Street, Edinburgh.

ON AMORPHOUS QUININE.

BY BARON LIEBIG.

In the preparation of sulphate of quinine, after all the crystals which can be obtained are separated, a dark-coloured mother-liquor remains, having an extremely bitter taste. On the addition of an alkaline carbonate, this liquid loses its colour and bitter taste, depositing, at the same time, a yellowish-white, or brownish precipitate, which, after being rinsed with water, and exposed to a gentle heat, agglutinates into a coherent mass, exhibiting the appearance of resin,

From the experiments of Sertuerner, Thiele, Bucholz, junior, Koch, and other Chemists, it has been long known that this resinous substance possesses the properties of a base, that it neutralizes acids perfectly; but the salts which are formed by these combinations with acids, have baffled all attempts at crystallization.

Sertuerner, who was the first Chemist to separate this resinous substance from the mother-liquor of sulphate of quinine, considered it to be a distinct and peculiar organic base, existing in yellow and red cinchona barks, associated with quinine and cinchonine. He assigned to this, as he supposed, new substance, the name *Quinoidine*, and greatly extolled its medicinal efficacy, in which he declared it was in all respects equal to quinine. In his journal (*Uber die neueser Furtschritte in der Chemie, Physik und Heilkunde*, Bd. iii., No. 2, page 269) he terms it ' a true fever-destroyer."

Subsequently, this substance, under the term quinoidine, has been employed medicinally in many places, and even introduced into the lists of commercial articles or price currents of many of the Druggists of Germany.

In certain mother-liquors of quinine left in the preparation of the sulphate, which were analysed by Henry and Delondre, and also a sample of quinoidine examined by Geiger, these able Chemists discovered an amount of quinine and cinchonine, accompanied by a resinous substance which they considered impeded the crystallization of the sulphates of the two bases, and which in their experiments they failed to separate. The results obtained by these Chemists, and the inferences obviously deducible from these results, rendered it indubitable that the medicinal efficacy of quinoidine must vary according to the greater or less proportion of quinine it may happen to contain. Now, there cannot be a doubt but that this uncertainty, with respect to the relative amount of quinine in commercial quinoidine, has prevented many Physicians from prescribing the latter as a remedy, notwithstanding the testimony borne to its efficacy.

Having occasion, some time since, to pass through Coblentz, I procured from Messrs. Jobst and Co., of that town, a sample of quinoidine, for the purpose of employing it for the preparation of quinoleine—a substance discovered by Gerhardt to result from the transformation of quinine, and to which much scientific interest attaches, in consequence of the recent discovery of Professor A. W. Hofmann, that quinoleine is identical with leucol, a body which is one of the components of the essential oil of tar, prepared from anthracite coal. It then occurred to me, that if the sample of quinoidine which I had procured contained quinine, it must yield a corresponding amount of quinoleine, and that, consequently, a very simple method of testing quinoidine for the amount of quinine it may contain might be based upon this property of quinine to be transformed into quinoleine.

On subjecting the sample I had obtained (which amounted to several ounces) to distillation with strong potass ley, I confess I was surprised at the large amount of quinoleine produced, which proved the presence of a far larger proportion of quinine than could have been anticipated. This unexpected result induced me to subject quinoidine to a stricter examination; and in order to avoid being misled by accidental circumstances, I procured, besides the Coblentz sample, specimens from Messrs. Hess, Leissler, and Fiedler, of Mayence, and from Messrs. Mettenheimer and Simon, at Frankfort, and also from a Druggist at Hamburgh.

These various samples of quinoidine I received partly in irregularly-shaped masses, and partly as square cakes of a darker or lighter brown colour, which, by the warmth of the hand, became soft and flexible, but were readily pulverizable in the cold. The operation of powdering it imparted to it an extraordinary degree of elasticity. All these samples were completely insoluble in cold water, but scantily soluble in hot water, imparting to the latter a strongly bitter taste. I may here however observe, in passing, that some commercial specimens which I have since seen are soluble in cold water, arising from a considerable admixture of other substances; differing also from the same cause, in many of the following properties:—

All the first samples I speak of dissolved in alcohol, in the proportion of one part to two of the menstruum; and from this alcoholic solution, water precipitates copious, yellowish-white, resinous flakes, which cohere into a mass like the original quinoidine. Dilute mineral acids, as well as most of the organic acids, dissolved my samples entirely, and by adding a sufficient amount of the substance, became completely neutralized. From these solutions in acids, ammonia and alkaline carbonates precipitated resinous flakes. On agitating the fluid containing these flakes and the flocculent precipitate with an equal volume of ether, the precipitate dissolves in the ether, *with the exception of a dark brown residue.* On evaporating the ether, a resinous mass is obtained, having all the properties of an organic alkaloid.

Its salts are precipitated by tannic acid. Chloride of platinum produces in its solution in hydrochloric acid a yellowish precipitate. Moreover, it dissolves completely in a solution of sulphate of copper with the separation of oxide of copper. Now there exists no resin, nor, indeed, any other substance similar to resin, which possesses this peculiar property.

These observations can leave no doubt whatever as to the chemical character of a considerable proportion of the residue to which the term quinoidine has been applied—namely, that it is a true organic base.

On subjecting the purified substance to elementary analysis, the following were the results:—

1st.—From the quinoidine of Mayence, 0.490 grammes yielded 1.3204 grammes of carbonic acid, and 0.3395 grammes of water.

2d. From the quinoidine of Frankfort, 0.618 grammes yielded 1.6575 grammes of carbonic acid, and 0.4250 grammes of water.

3d. From the quinoidine of Coblentz, 0.3475 grammes yielded 0.9475 grammes of carbonic acid, and 0.2875 grammes of water.

According to these analyses, this substance contains

	I.		II.		III.
Carbon	73.49	—	73.14	—	74.33*
Hydrogen......	7.69	—	7.64	—	7.57

The determination of the nitrogen, by the method of Varrentrapp and Will, yielded the following results :—

0.515 afforded 0.289 of platinum.
0.617 " 0.401 "

And, consequently, the substance under examination contains, according to the first analysis, 8.04 of nitrogen ; according to the second, 9.54 of nitrogen,—the medium of the two analyses giving us as its amount of nitrogen, 8.79.

ANALYSES OF THE CHLORIDE OF PLATINUM AND THE BASE FROM QUINOIDINE (AMORPHOUS QUININE).

I.—5.6563 grammes of the double salt yielded 0.1755 of platinum ; 0.8700 grammes of the double salt yielded 1.349 carbonic acid, and 0.303 of water.

II.—0.881 grammes of double salt yielded 0.224 of platinum.

III.—1.0668 grammes of double salt yielded 0.2715 of platinum.

From these analyses, therefore, the following are the proportions of carbon, hydrogen, and platinum, which exist in 100 parts of the chloride of platinum, and the substance derived from quinoidine :—

	I.		II.		III.
Carbon	32.44				
Hydrogen......	3.86				
Platinum	26.33	—	26.32	—	26.45

Now, if we compare the proportion of carbon, hydrogen, and platinum, existing in the chloride of platinum and this base, derived from quinoidine, with the amount of the same elements present in the corresponding chloride of platinum and quinine ; and, further, the amount of carbon, hydrogen, and nitrogen contained in the substance under examination, with the proportion of the same elements as they exist in quinine ; we perceive at once that the two substances have identically the same composition.

Quinine, according to the formula,

$$C_{20}\ H_{12}\ NO_2$$

contains—

Carbon, 74.33 ; Hydrogen, 7.75 ; Nitrogen, 8.62.

Chloride of platinum and quinine, according to the formula,

$$Cl\ H\ C_{20}\ H_{12}\ NO_2 + Cl\ Pt$$

contains—

Carbon, 32.38 ; Hydrogen, 3.53 ; Platinum, 26.83

The inference from these experiments, then, is irresistible : the uncrystalline substance derived from quinoidine bears exactly the same relation to ordinary quinine that uncrystalline sugar (barley-sugar) bears to crystalline (sugar candy). Both yield the same products of decomposition ; both have the same atomic weight, and identically the same composition ;

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* Carbon = 75, according to Prout and Dumas.

they differ only in form; in one word, the one is crystalline, the other, *amorphous.*

I deem this to be an important discovery, when we consider the high price of quinine, the possibility of a check to the supply of cinchona bark from the countries producing it, and the amount of the crude quinoidine which has accumulated since the manufacture of sulphate of quinine was commenced. Quinine, indeed, seems to be absolutely indispensable for the treatment of diseases; the progress of civilization in modern times has depended, far more than has been conceived, upon the discovery of a remedy for the fevers which prevail where tillage is imperfect, and in new and unbroken soils.

This chemical investigation has thrown an interesting light upon the testimonies borne to the efficacy of quinoidine in the treatment of fever, and the highest encomiums have been passed upon it; but the commercial specimens have differed very much in value; while some have consisted nearly altogether of amorphous quinine, others have contained only a small per centage.

It is necessary that the amorphous quinine should be separated from all admixtures and impurities, and prescribed in its pure state. There can be no doubt but the same substance will produce the same effect on the animal organism, whether exhibited in a crystalline or an amorphous state. The system, as we may say, makes no difference in such a case. As I have already observed, the mystery about quinoidine is completely solved by the discovery, that it usually contains a very large per centage of pure quinine in an amorphous state.

In a commercial point of view, it is certainly a matter of great importance that we should be able to judge by the mere external appearance of a remedy, of its purity; and consequently, how far we may rely upon its efficacy. This is thought to be the case with the crystalline sulphate of quinine, whilst the non-crystalline form of quinoidine has probably led to a disregard of the evidence for its usefulness, even more than the fact of its being, as usually sold, an admixture of various substances. But with respect to the mere amorphous form, when the quinine is separated from all its adhering impurities, it is in the same case with opium, castor, and many more of the most efficient remedies which we possess, particularly with the extracts of our Pharmacopœias. It is necessary to be assured of their purity before we employ them, but their amorphous form does not prevent their use. In many of these cases, indeed, having no direct or ready way of testing them, we rely solely upon the honourable character of the merchant and dealer; but we have a completely satisfactory test for the purity of amorphous quinine. Few medicinal agents afford so ready a means of distinguishing them, and detecting admixtures, as the organic alkaloids; but if these tests are not employed, it is as easy to be deceived in purchasing crystalline sulphate of quinine as the amorphous.

Amorphous quinine is completely soluble in dilute sulphuric acid, and in alcohol, as I have said above; it is also completely soluble in a solution of sulphate of copper, with separation of oxide of copper. And if its solution in a dilute acid yields, upon precipitation by means of ammonia, exactly the same amount of precipitate as the weight of the substance originally dissolved in the acid, there can be no doubt remaining as to the perfect purity of the sample under examination.

It only remains for me to observe, that no dependence should be placed upon the ordinary quinoidine of commerce. As I have already stated, some samples which I have seen, dissolve incompletely in water, forming a dark-brown muddy fluid; these have been probably produced by simply evaporating the mother-liquors of sulphate of quinine to dryness. They are, therefore, uncertain mixtures of various substances with sulphate of amorphous quinine, with or without excess of acid, so that in purchasing such specimens, the buyer is paying the price of an organic alkaloid for sulphuric acid, &c. The pure amorphous quinine should be separated, and it would then form a most valuable remedial agent; but the prescriber must be assured of its purity, and the test I have given will suffice for this purpose.—*Lancet, May* 23, 1846.

WATER-CRESSES.

Most persons are acquainted with the water-cress and its salutary properties; they know generally that it grows in brooks, and on the borders of fresh and running streams. Few, however, of those who, in the busy thoroughfares or quiet suburbs of London, hear the cry of "Water cre-e-ses," or see in their daily walks the old red-cloaked woman sorting the little bundles at the corners of streets, have any idea that the cultivation of this esculent now forms an important branch of horticultural and commercial industry; which, from the increasing consumption, and use made of the plant in pharmacy, is gradually rising into consequence. In the present day, the water-cress may be found on almost every table, from the highest to the lowest. It is one of the most powerful antiscorbutics with which we are acquainted, and is said to possess the property of exciting the appetite and fortifying the stomach. We have no certain information that it is cooked in any part of England, as is occasionally the case in France; but in the north of Germany, to which country we owe its original cultivation, it is boiled and eaten as spinach. In an old botanical work,* we are told that the watery part of Tothill-fields, Westminster, was over-run with water-cress, and that it grew on the banks of the Thames in several places. The same work also enumerates many places in England where this refreshing vegetable was abundant; and it is now known that, like many other of the simple but useful productions of Nature, which, in their natural varieties, abound wherever they may be beneficial to man, it is to be found in most parts of the world. It is of the cruciferous family, which comprehends about twenty species, all possessing high antiscorbutic properties, and of the genus Nasturtium, "said to have been so called from the effect its acrimony produces on the muscles of the nose—*nasus torsus*, signifying a convulsed nose."† The common cress is known as Nasturtium officinale, and presents two varieties, the green and the blue, which by cultivation have been rendered far superior to what they were in their wild state: being less acrid, and not so liable to contract the taste of slime and mud as those found in ditches and marshes. Fifty years ago, a considerable proportion of the supply that found its way to the metropolitan market was gathered from the numerous little streams which intersect the meadows near the towns of Newbury and Hungerford, in the county of Berkshire, from which places it was brought in sacks by the stage-coachmen of the day, who shared in the profits of the sale. The first attempts at regular cultivation in the neighbourhood of London, appear to have been made in the year 1808, at Springhead, a village near Gravesend. This plantation still exists, and is sometimes visited by the frequenters of the well-known semi-watering-place just mentioned, for the purpose of regaling themselves with a fresh-plucked salad and bread and butter. Another plantation was afterwards commenced in Surrey, but subsequently abandoned. The culture, however, continued to spread, particularly in localities favourably situated with regard to springs of water. Near

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* Miller's Gardeners' Dictionary, 1807.

† Loudon's Encyclopædia of Plants.

Rickmansworth, in Hertfordshire, where there is a fine stream running over a chalky bottom, there are now about fifteen acres under cultivation. The Springhead plantation consists of four acres, while on the opposite side of the Thames, at Waltham Abbey, in Essex, is another of six acres. These, though extensive, are insufficient to meet the demand of the huge metropolis. Other supplies are obtained from greater distances. From Uxbridge and Salisbury great quantities are forwarded to London, packed in hampers, every day in the year, excepting Sundays; and some idea may be formed of the enormous consumption from the sum total of the annual sales, which amounts to more than £10,000. The culture of cress requires much attention and watchfulness, especially in winter, in which season, during a single night, a sharp frost may destroy a whole plantation, if too remote from the springs to retain their mild temperature. The ground is generally laid out in parallel trenches, separated by small mounds, on which succulent vegetables may be grown. The bottom should be covered with several inches of handy vegetable earth, perfectly level and equalised, so that the water may have a regular flow in every part. The months of March and August are the most favourable for putting in the plants, which are generally set in suckers or tufts, eight or ten inches apart. A well-planted trench will be in full bearing after the first year, according to the temperature of the water and the nature of the soil. The activity of the vegetation depends particularly on the state of the atmosphere; but if the plantation has been made with care, and the plants well chosen, it will require no other precautions, with the exception of occasional weedings, than those necessary to guard it from winter frosts, and the irruption of foul and muddy water in thaws and storms. In favourable seasons the cress may be gathered every three weeks; but in cold weather, two months are sometimes required to bring the plants to perfection. After these gatherings, it is customary to roll and level the bottom of the trench, or to manure when required. A good plantation will last a long time; but it should be renewed by the same process as at first, whenever it shows signs of decay. Sometimes, in frosty weather, the supply of water is increased until the plants are completely covered; but as this submersion weakens them, it should not be continued longer than absolutely necessary. Mr. Loudon describes the process as follows:—"Some market gardeners, who cannot command a small stream of water, grow the water-cress in beds sunk about a foot in a retentive soil, with a very gentle slope from one end to the other. Along the bottom of this bed, which may be of a convenient length and breadth, chalk or gravel is deposited, and the plants are inserted about six inches every way. Then, according to the slope and length of the bed, dams are made six inches high across it, at intervals; so that when these dams are full, the water may rise not less than three inches on all the plants included in each. The water being turned on, will circulate from dam to dam; and the plants, if not allowed to run to flower, will afford abundance of young tops in all but the winter months. A stream of water no larger than what will fill a pipe of an inch bore, will, if not absorbed by the soil, suffice to irrigate in this way an eighth of an acre. As some of the plants are apt to rot off in winter, the plantation should be laid dry two or three times a year, and all weeds and decayed parts removed, and vacancies filled up. Cress grown in this way, however, is far inferior to that grown in a living stream flowing over gravel or chalk." The history of the cultivation of this plant on the Continent affords some interesting particulars, which serve to exemplify the advantages that accrue, with proper attention, from the apparently humblest objects. About the beginning of the present century, an attempt was made to form cress grounds in the neighbourhood of Paris, similar to those then common on the banks of the Rhine, by the Count de Lasteyrie, but without success; while the markets of that capital where supplied only by persons who travelled to distances, sometimes of forty leagues, collecting the cress wherever it could be found. The supply was seldom sufficient to satisfy the limited demand, although it frequently consisted of nothing more than bunches of marshy plants masked by a few sprigs of the genuine vegetable. In the winter of 1809, Monsieur Cardon, then principal director of the hospital chest of the grand army, was quartered with his staff at Erfurt, the capital of Upper Thuringia. Walking one day in the environs of the city, when the earth was covered with snow, he was astonished by the sight of several long trenches, from ten to twelve feet in width, covered with the most brilliant green. Curious to know the cause of what appeared to be a phenomenon of that season, he walked towards them, and perceived with the greatest surprise that the trenches formed a large plantation of water-cress, presenting the aspect of a verdant carpet on a surface in every direction white with snow. In answer to his inquiries, M. Cardon learned that the plantations had existed for many years, and belonged to the authorities of the city, from whom they were rented by the cultivators, at the annual sum of £2400. Since that time, however, their value has greatly increased. From a statement published in 1830, we find that the annual return then amounted to more than £8000; and that the cress, highly esteemed for its purity and superior qualities, was sold in all the cities on the Rhine, and in the markets at Berlin, at a distance of 120 miles from the place of its growth. M. Cardon foresaw the benefits that might be expected to arise from the introduction of this branch of horticultural industry into the neighbourhood of Paris; and, after a long search, found twelve acres of a thin sandy alluvium at St. Leonard, in the valley of the Nouette, between Senlis and Chantilly, which, containing many beautifully limpid springs at a temperature of 59°, appeared to be well adapted for a cress plantation. He engaged two well-informed individuals from Erfurt who were acquainted with the method of cultivation. The ground was laid out in trenches of 250 feet in length by 12 feet in breadth; which were, however, afterwards reduced to one-half of those dimensions, as it appeared that the water lost its natural temperature, and froze in the winter, by flowing over so large a surface. In a few years, after an expenditure of £3200, there were 92,000 square feet under cultivation.

It was no longer the cress clandestinely gathered, often in flower, or run to seed, that was exposed for sale in the French metropolis. The cress of St. Leonard arrived, packed with a care to which the Parisians were strangers. Its freshness and purity were such, that the market-women, of their own accord, offered double the usual price before any demand had been made; and, in testimony of their high satisfaction, feasted the journeyman cultivator who had come to superintend the sale, and the waggoner, and sent them home decorated with ribbons and flowers. Much greater precautions appear to be taken in the packing and transport of the cress in France than in this country. The French growers are particularly careful in warm weather, and guard the plants from exposure to the least storm, as they then turn yellow. They pack them in baskets, which contain from 25 to 30 dozens of bunches, so arranged as to leave a circular opening or chimney up the centre, which always remains empty. The baskets are then placed on rails fixed across a waggon, so as to permit a free current of air through all the openings; and in the summer, before putting on the tilt, the whole are well watered, to preserve their freshness during the night, and they are delivered at the market early in the morning in the most perfect condition. The regularity of the arrivals and constant freshness of the cress sent every day from the grounds at St. Leonard, not only insured the success of the scheme, but brought forward a host of competitors. M. Cardon's German workmen left him to commence rival establishments; and there are now in the environs of Paris 16 plantations, producing annually 1,350,000 dozens of bunches, valued at £37,800 ; and, adding the charges of transport, and expenses of all the individuals employed in this branch of trade, which, a few years ago, had no existence, the sum actually circulated amounts to not less than £60,000. Formerly, the sale in Paris seldom amounted to more than £20 daily in the best season ; while at the present time, a supply of no fewer than 20 waggon-loads, worth £240, is required to meet the daily demand.—*Chambers' Edinburgh Journal.*

ON STARCH. ARROWROOT, AND SAGO.

EXTRACTED FROM A MEMOIR OF M. MAYET'S, BY M. GUIBOURT.

For a long time starch was considered as an unorganized product, or, as an immediate principle, analogous to sugar or gum, completely insoluble in cold water, but soluble in boiling water, with which it forms, on cooling, a gelatinous mass. Yet, in the year 1726, Leenwenhoeck ascertaining, by the aid of a microscope, that starch was an organized body, of a globular form, consisting of an exterior coat, resisting the action of water, and sometimes the digestive functions of animals, and of an interior substance readily soluble in water, and easy of digestion. But these observations were entirely forgotten, until, in 1895, M. Raspail again stated that each grain of starch is an organized body, consisting of an envelope or integument, unacted upon by cold water, becoming permanently coloured by iodine, and of an interior matter soluble in cold water, and also coloured blue by iodine, but readily losing this property by the action of heat or air, from which M. Raspail concluded that the property of being coloured blue by iodine was due to some volatile substance.

A paper by M. Caventou, in which this Chemist seems indisposed to admit the results obtained by M. Raspail, having induced me to occupy myself with this subject, I made a number of experiments, which, although confirming the statement of the organization of the grains of starch, disproved all the other assertions of M. Raspail. Thus, while unbroken potato starch, examined in water, under the microscope, presents the appearance of transparent grains, all entire, the broken starch put into water, forms rapid currents, due to the emission and solution of the soluble interior matter of the broken grains. A part of this matter disappears entirely ; another remains attached to the grains in the form of a jelly, and disappears on the application of a gentle heat. The broken integuments which form the envelopes of the grains of fecula, are then easily perceived.

But, with the exception of this result, which is confirmatory of the organized structure of the grains of starch, all the others tended to show that the three observed parts, namely, the *tegument*, the *gelatiniform matter*, and the *soluble matter*, were but one and the same substance, producing the same reactions with iodine, the acids, the alkalis, nutgalls, and metallic solutions, and that these three parts differed only in the form which organization had given them. Such was the conclusion to which I was brought by numerous considerations, some of which have since been confirmed.

M. Guerin-Varry, nevertheless, after having, in common with myself, distinguished three parts in starch, regarded these parts as three distinct substances, of different elementary composition ; but these results were contradicted by MM. Payen and Persoz, who, after having distinguished three different principles in the only soluble matter, afterwards admitted that, with the exception of an exceedingly thin integument not colourable by iodine, all the rest consisted of one and the same principle, to which they gave the name of *amidone*. Finally, M. Payen, in a subsequent memoir, published in [illegible]38 (*Annales des Sciences Naturelles Botaniques*, t. x., pp. 5, 65, *et* 161), where a *resumé* will be found of all the investigations which have been undertaken on the subject of starch, and of which a great part was his own, has definitively fixed the opinion of Chemists as to the constitution of starch, in regarding it as an organized body, but of a uniform nature and composition, represented by the formula $C_{12} H_{10} O_{10}$, a composition resembling that of cellulose, gum arabic, and anhydrous sugar. This conclusion, with the exception of the elementary composition, to which I had not directed my attention, corresponds with what I published in 1829; but there exists notwithstanding an essential difference in our results. I stated that potato starch consisted of an integumentary insoluble substance, and of an interior soluble substance, both colourable by iodine. M. Payen now thinks that this starch is organized and solid to the centre, and does not contain any part soluble in cold water. I founded my opinion on the fact that the starch bruised, not only dry but in water, and without any elevation of temperature being occasioned by rubbing, partly dissolved in water, and of this fact there can be no doubt; but M. Payen being of opinion that the starch may undergo a molecular modification by the act of rubbing, merely crushed it by pressing it between two plates of glass, and it was in this way that he observed, as I have just stated, that the starch was solid and organized to the centre, and that it did not yield to cold water any soluble part colourable by iodine. I deduce, from my original experiments, a confirmation of the correctness of this statement, from which it appears to result that the rubbing of the starch in water is sufficient to alter its molecular constitution, and to render a part soluble. I agree with M. Payen, that the starch is organized to the centre; but I still think, as far as regards potato starch, that there is a great difference between the strong and compact organization of the exterior part, and that of the central part, which separates from the former, and may be diffused through water in the form of flocculi, colourable by iodine.

I shall not follow M. Mayet in the correct account which he has given of the growth of the starch grains; of their transformation into dextrine and glucose by the action of acids or of diastase, &c. I shall also pass over the second part, which treats especially of the different medicinal feculæ. I only regret that he has not mentioned the remarkable difference of organization, which I have observed, between the starch of wheat and that of barley, a difference which has enabled me to explain how so accurate a Chemist as Proust could suppose that barley flour contained 55 per cent. of a principle similar to lignine, to which he has given the name of *hordine*, and which, nevertheless, does not exist.

There is also some confusion in the description of the different kinds of arrow-root and sago. Thus the fecula called by the English *Indian arrow-root*, came, ten years back, exclusively from Jamaica, where it is produced by a variety of the *Maranta arundinacea*, which M. de Tussac believed to have come from India, and on that account named it *Maranta Indica.* But this plant is indigenous to Jamaica, and it is from its fecula only that I have been able to say that it does not differ in any respect from that of the *Maranta arundinacea* cultivated in the Antilles. I ought to add that the *Maranta Indica* or *arundinacea* has been introduced into India where it did not originally exist, and it is now cultivated there only with a view to the sale of the feculas, so that it now, more than formerly, merits the name of *Indian arrow-root*, which has been given to it by the English, even whilst procuring it from Jamaica. As to the *original Indian arrow-root*, which is extracted at Travancore, according to Ainslie, from the root of the *Curcuma angustifolia*, it is easily distinguished by its form, which is sometimes ovoid, sometimes elongated, of considerable size, rounded at one of the extremities, and terminating in a point at the other, often resembling a grain of rice.

For many years also, the English have obtained from Tahiti and other islands of the South sea, a fecula known by the name of *Tahiti arrow-root.*

It is generally spherical, but also often ovoid, elliptic, or rounded, with a prolongation in the form of a neck, suddenly terminated by a plane. Many other starch grains are also terminated at the half or two-thirds of their length by a plane perpendicular to the axis, or by two or three planes inclined between them, which may be attributed to a stoppage of growth caused by the contact of other grains: that which particularly distinguishes this fecula, is a very large and circular hilum on each grain, and frequently the appearance of cracks or black streaks in the form of rays. It is almost entirely dissolved on boiling it for some time in water, leaving only a slight flocculent residue, scarcely perceptible, and which remains suspended in the liquid without being deposited.

With regard to *sago*, I think there yet remains much uncertainty as to its origin; it has been stated to be produced by the *Cicas revoluta* and *circinalis*, *Arenga saccharifera*, *Phœnix farinifera*, and different species of *Sagus*; and at so great a distance it is difficult to decide as to which of the trees really produce the sagos of commerce, for there are several kinds. Planche, in an excellent memoir on the sagos, has described six species, which he distinguishes by the names of the places from which they come. Preferring to classify them according to their characters, I distinguish only three species.

First Species.—*Ancient* or *First Sago*. I cannot otherwise designate this species, which comes from different parts, and varies much in colour. It comprehends:—

1st. *Maldivian Sago* of Planche, in spherical globules, of two or three millimetres in diameter, translucid, of an unequal pinkish white colour, very hard and insipid.

2d. *New Guinea Sago* of Planche, in rather smaller globules, of a bright red colour on one side, and white on the other. All the coloured sagos present, as is known, have this character.

3d. *Gray Sago of the Moluccas*, or *Brown Sago of the English*; of unequal globules, from one to three millimetres in diameter, opaque, of a dull gray colour on one side, and whitish on the other. I think that this gray colour is not natural, and that it arises from an alteration of the original rose colour—a change caused by long keeping and by humidity.

4th. *Large Gray Sago of the Moluccas*; exactly resembling the preceding, only that the globules are from four to eight millimeters in diameter.

5th. *True White Sago of the Moluccas*; entirely resembling No. 3, only that it is purely white, owing to the complete edulcoration of the fecula of which it is made.*

Whatever may be the places of origin of these sagos, they all possess the following characters:—

Rounded globules, generally spherical, all isolated, very hard, elastic, and difficult to break or powder.

The globules put into water, generally swell to twice their original size, but do not adhere together.

The grains of which the globules are composed, when isolated from each other by agitation with water, coloured with iodine, and viewed under the microscope, present an ovoid, elliptic, or elongated elliptic form. The elliptic grains are often compressed into a kind of neck at one extremity, and this neck is sometimes inclined on the axis. The granules frequently appear cut by a plane perpendicular to the axis, or by two or three planes inclined between them. This character resembles that of the fecula obtained from the *Tacca pinnatifida*; but this is generally spherical, while that of the sago is almost always elongated. The hilum is dilated.

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* This white sago, which sometimes comes from India or the Moluccas, as well as the *New Guinea sago*, and the *gray Molucca sago*, must not be confounded with the artificial sago, made from potato starch, which can be made white, red, or gray, and which perfectly resembles the real. The sago of potato starch may always be known by its taste of starch.

The water in which the true sago has been macerated, on being filtered, is not coloured by iodine. After boiling for more than an hour in a large quantity of water, the sago fecula leaves a considerable deposit, dense, and easily separated from the liquid; this residue, coloured with iodine and viewed through the microscope, appears composed of very thick integuments, almost entire, or lacerated, of a white or violet colour; and of a parenchymatous matter, also very thick, and of a violet colour.

Second Species.—*Second Sago.*—This species corresponds with the *pinkish Sago of the Moluccas* of Planche. It is in very small globules, less regular than those of the *first sago*, and sometimes stuck together to the number of two or three. Soaked in water, it swells to double its volume, and the water appears slightly mucilaginous, yet it is not sensibly coloured by iodine. The isolated grains of the fecula have exactly the same form as those of the sago No. 1, but they are less acted upon by boiling with water. After boiling for an hour, the liquid holds the parenchymatous portion of the starch in suspension, which is coloured of a reddish violet by iodine, and which frequently presents an opaque point, more highly coloured in the centre. On being allowed to stand, a very dense deposit collects at the bottom of the liquid, which consists of fragments of teguments, membranous, folded, dense, and of a violet colour, and other teguments less altered; hollow, and torn at several points on the surface, and of a violet blue.

Third Species.—*Tapioca Sago.*—I apply this name to this species of sago, now so abundant in commerce, because it bears the same relation to the *ancient, or first sago*, and even to the preceding sagos, that tapioca bears to "*Moussache*" (Tapioca meal?) which is the fecula of the *manioc* (*Jatropha manihot*); that is to say, that whilst the two preceding species of sago, whatever may have been stated to the contrary, have been neither baked nor submitted to any heating process, as is proved by the perfect state of nearly all their grains of fecula. This, the *Tapioca sago*, has been submitted to the action of heat while in the state of a moist paste. This offers an explanation of all its characters.

This sago is not in spherical globules like the two preceding species, or at least, there are but very few of the globules of that form. It is rather in the form of very small irregular tubercular masses, formed by the adherence of different numbers of primary globules. Soaked in water, it swells very much, and becomes of a pasty mass, white and opaque. On the addition of more water it further divides, and partly dissolves. The filtered liquor is strongly coloured blue by iodine. The unfiltered liquor, examined through the microscope, exhibits entire grains of fecula resembling those of true sago, and also a great number of broken and torn integuments. A small quantity of this fecula boiled for an hour in a considerable quantity of water, behaves itself in a similar manner to sago No. 2.

The facility with which the *Tapioca sago* swells, and is divided by water, has occasioned its being, in the present day, preferred as an article of food to the *ancient sago*. It has been described by Planche under the name of the *white sago of the Moluccas*, and by Dr. Pereira under the name of *pearl sago*. M. Goubert, a French merchant established at Sydney, has sent me a specimen, stating that it came from Tahiti. From this, I thought for some time, that this sago was the tapioca of the fecula of the *tacca pinnatifida*, but this it certainly is not.—*Journal de Pharmacie.*

ON THE ACTION OF SUGAR ON TARTARIC ACID.

BY M. VOGEL.

It is a well-known fact, that sugar, and also tartaric acid, when exposed to air that is not very humid, do not undergo any sensible change; they attract but a slight degree of moisture.

But the result is quite different when a mixture of these two substances is exposed to the air. Whilst this mixture, preserved from the action of the air in well stopped bottles, does not undergo any appreciable change, yet if kept in a paper box which does not quite exclude the access of air, it loses, in a short time, its pulverulent form, and becomes a viscious mass. When it has undergone this change, it is no longer possible to obtain, from its solution in water, crystals of sugar or tartaric acid. These two substances appear to have undergone a reciprocal decomposition by their mixture in contact with air. I have made a few experiments with the view of elucidating this subject.

A mixture of one part of tartaric acid and three parts of sugar was exposed to the air in a porcelain capsule. After a few days, the mixture had lost its pulverulent form, and its weight was increased by several hundredths daily. The powder assumed, successively, the form of a viscious mass, and afterwards of a transparent liquid, containing the two ingredients in solution.

The mixture, exposed to the air for two months, was no longer of a viscious consistence, but had become as liquid as a thin syrup. This deliquescence of the mixture takes place more rapidly when exposed on a flat plate, in a cellar, and especially when the mixture consists of equal parts of sugar and tartaric acid. The powder, spread in thin layers, changes into a perfectly transparent solution in twenty-four hours.

Sugar and tartaric acid, when separately exposed under similar circumstances, to the air of a cellar, do, it is true, attract moisture, but in a less degree, and more slowly, than when mixed, from which it follows, that the tendency of these two substances to attract moisture from the air, is augmented by their mutual contact.

Wishing to ascertain the quantity of water absorbed by the mixture on becoming completely liquid, I exposed a mixture of one part of sugar and two parts of tartaric acid to the air of a cellar, on a large porcelain vessel previously weighed. After having completely passed to the liquid state the solution, containing two ounces of sugar and one ounce of tartaric acid, weighed four ounces and six drachms; the mixture had, therefore, absorbed one ounce and six drachms of water in becoming liquid.

As I have already remarked, it is impossible to extract the sugar or tartaric acid, in a crystalline state, from this liquefied mixture, because the solution, evaporated to dryness, again rapidly attracts water from the atmosphere. The liquid, evaporated to dryness, dissolves completely in absolute alcohol, but neither the sugar nor tartaric acid, can be separated by crystallization from this alcoholic solution. The following experiment clearly shows that the tartaric acid has undergone an alteration by its contact with the sugar. When lime-water is added to the liquefied mixture, until the acid has been perfectly neutralized, a very small quantity of tartrate of lime is precipitated, and the filtered liquid contains a large quantity of a salt of lime in solution. The acid, thus, appears to have undergone, from its contact with the sugar, one of the modifications discovered by M. Frémy, and to be converted into *tartralic acid*. This supposition is confirmed by the following fact. The liquid, neutralized by lime-water, acquired an acid reaction when oxalic acid is added to it in insufficient quantity to precipitate the whole of the lime.

To be satisfied that the tartaric acid was changed, by its admixture with sugar, into tartralic acid, it was necessary to separate these two substances from the solution, which was effected by the addition of carbonate of baryta, without heat, until it was perfectly neutral. In this way there was formed a portion of tartrate of baryta, which being insoluble in water, was separated by a filter, while the filtered liquid contained the sugar, and a salt of baryta soluble in water. When alcohol was added to this solution, a precipitate was formed, which dissolved completely in a small quantity of water. This aqueous solution became turbid on boiling it, and deposited tartrate of baryta, formed by the elevation of temperature. This precipitate, therefore, comports itself in the same manner as a compound of tartralic acid, which is converted into tartrate of baryta, at the temperature of boiling water. On decomposing with dilute sulphuric acid, the first precipitate separated by the addition of alcohol, and evaporating the liquid *in vacuo*, over sulphuric acid, a viscous liquid is obtained, possessing all the properties of tartralic acid.

It is very probable, that in the syrup of tartaric acid of the (foreign) Pharmacopœias, there is also some tartralic acid. If, then, cane-sugar is converted, by tartaric acid, into grape-sugar, as has been long known, it is equally true that the acid is converted, by the action of the sugar, into tartralic acid.

To obviate the objection that may be made, by attributing the strong tendency of the mixture to absorb water to the greater state of division which the tartaric acid has undergone in consequence of its mixture with the sugar, I exposed a mixture of tartaric acid and gum arabic in a damp atmosphere. This mixture did not become more moist than the tartaric acid would have done alone, and I was able to recover the tartaric acid in crystals, by means of alcohol or even water. Thus, tartaric acid does not undergo decomposition in a moist atmosphere, when mixed with gum.

SUMMARY.

It results from the foregoing experiments :—

1st. That a mixture of sugar and tartaric acid absorbs water from the atmosphere much more rapidly, and in greater quantity, than when these two substances are separately exposed.

2d. That neither the sugar, nor the tartaric acid, can be separated from the mixture which has become liquefied in the air with their primitive characters, that is to say, in the crystalline form.

3d. That the tartaric acid is transformed, by its mixture with the sugar and water, into tartralic acid.—*Journal de Pharmacie.*

DECOMPOSITION IN GINGER BEER.

THE CONVERSION OF CANE-SUGAR INTO A SUBSTANCE ISOMERIC WITH CELLULOSE AND INULINE.

BY THOMAS TILLEY, ESQ., PH.D., & DOUGLAS MACLAGAN, M.D., F.R.S., EDIN.*

When the juice of beetroot undergoes fermentation at temperatures varying from 30° to 40° C., the cane-sugar which it contains is at first converted into sugar of grapes, and after some time into mannite, lactic acid and a gummy substance, having a composition identical with that of gum-arabic. This is remarkable, inasmuch as it affords an instance of what may be called a retrograde chemical action, the sugar being converted into dextrine —a change similar to that which occurs in fruits when they lose their sweetness, and assume that condition commonly called "sleepy." The conversion of cellulose into dextrine and sugar seems to be a process of continual occurrence and great importance in the vegetable economy, but we are not aware of any example of the reverse of this action, except those instances mentioned above; in the former of which sugar is converted by fermentation into a body having all the properties and composition of gum; in the latter, the sugar being changed into cellulose†. We therefore consider the observation we are about to describe to be possessed of some interest, as affording another case of a similar retrograde action. It has been observed that the effervescing drinks known as lemonade, gingerade, &c., made by forcing carbonic acid gas into solutions of sugar variously flavoured with tartaric acid and essential oils, in certain cases lose their fluidity, and assume a thick, slimy consistence. When the bottles containing these thickened liquids are opened, the expansion of the carbonic acid expels their contents with difficulty, owing to their extreme tenacity. Instances of this change are of continual occurrence, all the manufacturers of whom we have inquired having observed it when the bottles had been kept for some time. Various opinions have been expressed by them as to the cause of the conversion, but it seems to occur invariably when the liquor is kept long enough. We are indebted to Mr. Baildon of this city (Edinburgh) for an opportunity of examining a sample of gingerade, in which this thickening had occurred. This liquid is made by sweetening an infusion of ginger-roots with cane-sugar, and flavouring it with oil of lemons and tartaric acid; this is then placed in bottles, and carbonic acid forced by pressure into the fluid. Another manufacturer uses the following ingredients in the preparation of effervescing lemonade:—Two ounces of honey, four pounds of sugar, two ounces of citric acid, two drachms of oil of lemons, and one and a half ounce of bicarbonate of soda. According to the opinion of this manufacturer, the change occurs chiefly in winter when the liquid is exposed to cold, and he thinks that the addition of a double proportion of honey tends to prevent it. To separate the substance to which the viscidity was owing, the contents of a bottle were digested with six or seven parts of alcohol, under the action of which the gummy matter consolidated, and when dried became so hard as to be pulverizable. After being powdered, it was again digested and washed with alcohol until nothing more was dissolved. When dried at 100° C. it had the appearance of a semi-transparent horny substance, and was sufficiently elastic to render pulverization difficult. The alcohol contained in solution a quantity of sugar of a brownish colour, quite uncrystallizable, and rendered sour by the presence of the acid used in the manufacture.

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* Communicated by the Chemical Society; having been read April 21, 1845.

The gummy substance treated with cold water slowly reassumes its original appearance. When treated with a large quantity of boiling water it forms a mucilage, which filters with difficulty. Iodine produces no effect on the solution. Subjected to Trommer's test for dextrine, sugar and gum, this did not indicate the presence of any of these substances. With nitric acid it produces oxalic acid. It gave a precipitate with diacetate of lead. It contains, after having been washed with alcohol, a small quantity of ashes, amounting to 1.37 per cent. It was analysed in the usual manner.

I. 0.746 of substance gave, with oxide of copper and chlorate of potash, 4.070 HO and 1.1735 CO_2=0.04727 H and 0.32448 C.

II. 0.1525 of substance gave 0.092 HO and 0.232 CO_2=0.010222 H and 0.06474 C.

These numbers, allowance being made of the ashes, give the following proportions:—

	I.	II.	Atoms.	Calculated.
Carbon	43.80	43.31	24	43.71
Hydrogen	6.14	6.80	21	6.25
Oxygen	50.06	49.89	21	50.04

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† See Mulder's *All. Phys. Chem.*, p. 243 *et seq.*

From this it would appear that this gummy substance is isomeric with cellulose and inuline*.

This substance, which has a composition similar to cellulose and inuline, is evidently formed from the cane-sugar in the lemonade, as all its other constituents exist in too small quantity to admit the idea of their having been its origin.

2 atoms sugar	C_{24}	H_{22}	O_{22}
1 ... water		H	O
1 ... gummy substance	C_{24}	H_{21}	O_{21}

This substance is formed then from two atoms of sugar by the abstraction of one atom of water.

As a solution of the gummy substance gave a compound with lead, we endeavoured to obtain by its aid its atomic weight. 0.260 of the precipitate gave of lead and oxide of lead quantities equal to 0.316 oxide of lead, which, when allowance is made for ashes, is equal to 55.8 per cent. of oxide of lead. We had not enough of the salt to enable us to make the combustion, but have calculated the formula from the quantity of lead.

		Atoms.	Calculated.
Carbon	19.31	24	1834.4 = 18.7
Hydrogen	2.76	21	260.0 = 2.7
Oxygen	22.11	21	2100.0 = 21.4
PbO	55.80 found	4	5578.0 = 57.1

From 55.8 per cent. oxide of lead the atomic weight found is 4400.0. The calculated one is 4198.4.

We had imagined that this curious change in sugar might have been the effect of organization, but our friend Mr John Goodsir was kind enough to examine the substance, and informed us that he could discover no trace of organization.—*Philosophical Magazine, January* 1846.

ON THE BEST MODE OF CAUSING THE DISGORGEMENT OF LEECHES.

In a report made to the Society of Pharmacy of Paris, on the above subject, by Messrs. Gaultier, de Claubry, and Foy, the authors describe some experiments made for the purpose of testing the value of a method recently recommended for disgorging leeches. This method consists in drenching the leech, as soon as it is removed from the patient, with wine, which causes it immediately to vomit blood. The leech may be left in the wine for two or three minutes without suffering permanent injury; but a longer immersion would prove fatal.

Experiments were tried with different kinds of French wines, all of which

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* Cellulose, Payen. Endine.
Carbon 43.40
Hydrogen ... 6.12
Oxygen ...... 50.38[a]

Inuline. Parnell.
Carbon 43.95
Hydrogen ... 6.30
Oxygen ...... 49.75[c]

From turnip. Fromberg.
Carbon 43.95
Hydrogen ... 6.13
Oxygen ...... 49.66[b]

From Dahlia root. Payen.
Carbon 44.19
Hydrogen ... 6.17
Oxygen ...... 49.64[d]

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[a] *Ann. des Sc. Nat.*, 1840, p. 73. Bot.
[b] Mulder, *Op. cit.*, p. 203.
[c] Phil. Mag., vol. xvii. p. 126.
[d] *Op. cit.*, p. 91.

answered equally well. It was found, however, that this method of treating leeches caused them to disgorge only about one-half of the blood they had previously sucked; and if they were left in the wine for four or five minutes they invariably died, either immediately or within four or five days.

Experiments were also made with a mixture of spirit of wine and water, and a solution of cream of tartar, either of which was found to produce as great a disgorgement as the wine, but accompanied with more violent convulsions in the leech.

Comparative experiments were made by disgorging some leeches with the pressure of the fingers, which entirely evacuates the blood, and immersing others in wine, from which it appeared that although the former method caused greater temporary exhaustion to the leeches, yet on their recovery in a few days, they were more healthy and vigorous, and when again applied, sucked with greater avidity than those which had been treated with wine.—*Journal de Pharmacie.*

DEFENCE OF THE ASSOCIATES AGAINST THE CHARGE OF APATHY.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

London, June 1846.

Sir,—At the Anniversary Meeting of the Pharmaceutical Society, the Council expressed regret at the scanty attendance at the Lectures. This, Mr. Humpage ascribed to apathy on the part of the Associates; I think Mr. Humpage is wrong in concluding that apathy on their part is the cause of so few attending; I think that if he were to look a little deeper into the matter, he would find some other cause. He appears to forget that Associates are not their own masters, and that they have to consult the wishes of their employers before they can attend Lectures. Let Mr. Humpage be a little more just to the Associates; I do not ask him to be generous, but justice is not too much to ask. He has assistants I doubt not, and perhaps he allows them to attend the Lectures (I hope he does), but he must not conclude from this, that all the other Members do likewise. There are some Members whose names occupy a very distinguished place in your pages, and who are strongly advocating the cause of education, that will not allow their assistants to attend any Lectures. These Members preach to their assistants the necessity of acquiring a certain amount of information; they point to the top of the tree of knowledge; they talk of the splendid prospect which it commands, and when they have brought their hearers to the determination of attempting to mount this rugged tree, they coolly lop off the boughs by means of which alone the summit is to be reached. How are we to account for this incongruity? It is much more difficult to account for than the falling off of Associates, which puzzles Mr. Humpage so much. I think I can enlighten him on this subject. The reason of this falling off is, because Associates do not derive any benefit from belonging to the Society; they despair of being able to pass an examination, not because they have not inclination to prepare for it, but because no opportunity is given them of so doing; and, therefore, they care not to belong to a society by sufferance instead of qualification, for what credit is it to belong to the Pharmaceutical Society of Great Britain unless by examination? To be sure, there are some persons who make a great fuss with their diplomas, but I dare say it is because these are the only marks of qualification which they possess.

Let Members have the fairness to afford their assistants opportunities of obtaining the knowledge which is demanded of them, and I will answer for it they will be gainers in the end; by the increased assiduity of the assistants, by their gratitude, and by the mutual good feeling that will result. It is too much to expect an assistant to make the interest of his employer his study, if his own is not studied. I have never yet attended any of the Lectures of the Society, not because I have not desired to do so, but because I knew that I might as well ask my employer for one of his teeth, as to ask him to allow me to attend lectures.

I am, Sir,
Your obedient servant,
T. S. C., A. P. S.

THE SALE OF MEDICINES BY HUCKSTERS.

Ashburton, Devon, *June 8th*, 1846.

Sir,—As an interested party in the proposed Bill, I beg leave to give you my opinion on the matter.

It is evident that neither Mr. Farmar* or Mr. Burnedge can know much of the routine of a country business, or they would not be disposed still to allow the sale of compounded medicines to any other than a Druggist. I quite accord with Mr. Raw, of Richmond: the circumstance of restricting the dispensing prescriptions only to the registered Druggist, will be making the matter worse than it is at present, as it will at once LEGALISE the small shopkeeper in that which he now feels to be an encroachment upon the trade of the Druggist. Indeed, the melancholy circumstances which sometimes occur, do not arise from errors in dispensing, so much as from the sale of Medicines by the Huckster.

Those gentlemen who reside in the fashionable and larger places, must remember that in the small towns prescriptions are about as scarce as "blackberries on Christmas-day," and the sale of compounded medicines, therefore, becomes the principal trade. As to any opposition on the part of the public in small places, I am sure there would not be any, as they would be greatly benefited by restricting the sale of medicine to registered and responsible persons; and many places that will not now support a regular Druggist would then do so.

I am, Sir, yours respectfully,
F. W. HERRON.

NOTICES OF BOOKS RECEIVED.

REGLEMENT DE LA SOCIÉTÉ DE PHARMACIE D'ANVERS.

Journal de Pharmacie, *publié par la Société de Pharmacie d'Anvers, sous la direction d'un Comité, composé de MM. Acar, Molyn, Pypers, Siroux, Vanderheyden, et Verbert.* 1845, tome. i., 8vo, pp. 628; tome. ii., Nos. 1, 2, 3, 4, 5, 1846. *Anvers: Imprimerie de L. J. De Cort, Fosse-aux-Crapauds.*

This journal was commenced in January 1845, and, it is stated in the prospectus, that until that period no journal devoted exclusively to Pharmaceutical science existed in Belgium. Consequently those Pharmaciens who desired to publish papers or observations, were obliged to resort to the French journals, or to the medical journals of their own country.

The Pharmaceutical Society of Antwerp considering it desirable to keep pace with the advancement made by the Pharmaciens in other countries, projected the new journal to supply the deficiency, long felt by those who were anxious to promote the improvement of their profession. The success which has attended this undertaking is very satisfactory. The journal contains many original papers on interesting and useful subjects connected with Pharmacy and Chemistry, and it also contains extracts from the principal journals on the Continent as well as in Great Britain.

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* See our last number, p. 561.

Considerations sur la Legislation Pharmaceutique Belge. Par J. H. J. Pypers, Pharmacien.[*] *Ouvrage publié par la Sociéte Libre des Pharmaciens d'Anvers.* 8vo, pp. 220. *Anvers: Imprimerie de L. J. De Cort, Fosse-aux-Crapauds,* 1844.

Lectures on the Urine and on the Pathology, Diagnosis, and Treatment of Urinary Diseases. By John Aldridge, M.D., *Lecturer on Chemistry at the Medical School, Park Street; Member of the Royal Dublin Society, and of the Pathological and Natural History Societies of Dublin.* 8vo, pp. 80. *Dublin: Samuel J. Machen,* 28, *Westmoreland Street.*

A Practical Manual, *containing a description of the General, Chemical, and Microscopical Characters of the Blood, and Secretions of the Human Body, as well as of their Components, including both their Healthy and Diseased States; with the best Methods of separating and estimating their Ingredients; also, a succinct Account of the various Concretions occasionally found in the Body and forming Calculi.* By John William Griffith, M.D., F.L.S., *Licentiate of the Royal College of Physicians of London, Honorary Member of the Philosophical Society of St. Andrews, and Senior Physician to the Finsbury Dispensary. London: Richard and John E. Taylor, Red Lion Court, Fleet-street.*

Observations on the Edinburgh Pharmacopœia, and on the Dispensatories of Dr. Christison and Dr. A. T. Thomson; *to which are added Illustrations of the Present State of Pharmacy in England.* By Richard Phillips, F.R.S., L. & E., *and Hon. Member of the Pharmaceutical Society.* (From the *Medical Gazette, Pharmaceutical Journal,* and *Medico-Chirurgical Review.*) 8vo, pp. 56. *London: Samuel Highley,* 32, *Fleet Street.*

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[*] Secrétaire de la Société libre de Pharmaciens d'Anvers, Membre de la Société de Medecine de la même Ville, Membre de la Commission chargée en 1840 par le Corps Médical d'Anvers, de la Reduction d'un projet de loi sur l'Exercice des différentes Branches de l'Art de Guérir, Membre Correspondant du Cercle Medico-Chimique et Pharmaceutique de Liège.

TO CORRESPONDENTS.

A. P. S. (Barnstaple).—The *Edinburgh Pharmacopœia*, 1841, has a formula for Morphiæ Muriatis Solutio as follows :—℞ Muriate of Morphia ʒiss.—Distilled water f℥xv.—Rectified spirit f℥v. M. This is estimated to be about the strength of laudanum, and in Scotland it is the authorized formula. In England, several formulæ are in use (see vol. i., p. 170), among which are Magendie's (an ounce containing sixteen grains of the salt), and another (an ounce containing eight grains). Whenever solution of morphia is ordered in England, the strength should be specified, otherwise it is uncertain which of the above preparations may be used, and serious mischief may arise from this indefinite manner of prescribing a dangerous remedy.

A. V.—Ung Anthracokali.—See vol. iv., p. 147.

" A Student."—Rectified spirit throws down mucilage from expressed juices and concentrated infusions.

Mr. J. Taylor, jun.—See vol. i. p. 399. We can add no fresh information.

W P., A. P. S.—The photographic process for taking portraits, is patented, and cannot be practised without a licence from the patentee, who is careful not to disclose the minutiæ of his manipulations. We have, therefore, no means of obtaining the particular information desired by our correspondent.

T. A. (Leeds)—We doubt whether the advantage of uniformity would be gained by publishing the extemporaneous formulæ of Physicians for preparations not in the Pharmacopœia. As a general rule, this would lead to an opposite result, as all would have an equal claim to the publication of their respective formulæ, each differing from the others.

A. Z.—A solution of shellac or mastic, or both, in rectified spirit forms a good cement for affixing paper labels to tin boxes.

" An Invalid" should consult a Physician.

" An Associate" (Manchester).—We think, in the preparation of ink, it is better not to boil the ingredients, but to macerate them for a few weeks cold. We cannot understand what is meant by ink " becoming chalky."

A. P. S. (Islington)—The distributor had no authority from the Council to deliver the last number of the journal on Sunday.

M.—Dr. Gregory's powder, sold with the label in question, is liable to a stamp. Seidlitz powders are exempt.

" A Member of the Pharmaceutical Society " is advised to visit the laboratory, and judge for himself.

"A Country Member" (Manchester).—See p. 3 of this number.

H. Crow.—(1.) A platinum crucible should be used for fusing silica.—(2.) The glaze of earthenware is not always the same ; lead, silica, borax, &c., are used in its composition.

G. A. B.—A cheap sulphate of ammonia, fit for agricultural purposes, may be obtained from some of the Gas-works ; it is formed in the process sometimes adopted for the purification of the gas.

Y. B.—(1.) The crystals should be examined, and their nature determined from experiment.—(2.) Coumarine.—(3.) A metal worm should not be used.—(4.) We know of no authorized formula for Tinct. Pyreth. Comp.—(5.) Sulphate of quina.—(6.) The practice of using *subnitrate of mercury* for making *unguentum hydrargyri nitratis*, is quite unjustifiable ; the ointment thus made is totally different from that of the Pharmacopœia.

J. D.—We know of no authorized formula for *spiritus nuc. juglandis.*

" Tumultus."—It is a typographical error. The specific gravity is 1.77.

" A Constant Reader" is requested to furnish us with his name. We should be glad to investigate the subject further.

Advertisements to Mr. Churchill, Princes Street, Soho.

Other Communications to The Editor, 338, Oxford Street, before the 20th of the month.

THE PHARMACEUTICAL JOURNAL.

VOL. VI.—No. II.—AUGUST 1st, 1846.

DELAY IN THE PUBLICATION OF THE PROPOSED PHARMACEUTICAL BILL.

The Council, being aware of the necessity of caution in promulgating a measure so important, and attended with so many difficulties as the one under consideration, have thought it right to refrain from publishing officially a complete Bill until every clause had been considered in all its bearings and satisfactorily decided. The propriety of this course has been proved by the fact, that the communications with the President and Censors of the College of Physicians have opened subjects for consideration which had not previously been contemplated. Further suggestions have been received from other quarters which claim attention.

A general outline of the Bill has been given in this Journal, from which our Members may form an idea of the nature of its provisions; but the object to be especially guarded against is opposition from other bodies, and for this purpose it is necessary to ascertain on what grounds (if any exist) such opposition might be expected, in order to remove if possible every objectionable word without detracting from the value of the measure.

It being the desire of our body to obtain proper legislation without interfering in any respect with the interests of others, a Bill framed for this purpose need not provoke any hostility whatever, if the requisite precautions be taken to avoid what would be likely to occasion it.

We are disappointed in being obliged again to defer the publication of the Bill, but several points being still under consideration, it has been decided that further delay is advisable for the reasons above stated.

THREATENED EXCISE INFLICTION ON CHEMISTS.

We are informed, that in consequence of the frauds on the revenue committed by certain manufacturers of spirit of nitre and sal volatile, and recently detected, it has been proposed to place all Chemists and Druggists, both wholesale and retail, under the paternal care of the Board of Excise. If the plan under contemplation should be carried into effect, all persons possessing stills, will be required to register themselves and take out licences. No spirituous compounds can be sent out without an account being kept of each item, and, if above a certain quantity, accompanied with permit. Chemists will be altogether under the supervision of the Excise, and liable to inquisitorial visits on all occasions.

We have not yet seen a copy of the proposed enactment, but have heard enough of it to be convinced of the necessity of watching its progress, and making preparation for taking such steps as may be requisite for protecting the interests of our body. We shall make it our business to investigate the subject fully without delay.

During our late exertions in reference to the sale of spirit of wine, we considered in all its bearings the plan which had been suggested of granting a licence to Chemists, and the result of a mature deliberation was the conviction that this would be ruinous to the respectability of our body, and fraught with great evil. We are persuaded that if the law described to us as being under contemplation were to pass, a most serious inconvenience and injury would be inflicted on Chemists in their ordinary business, and abuses worse than those now complained of would prevail. The licence to sell spirits being possessed, many small shops would be in a covert manner converted into dram-shops— a branch of business very profitable no doubt, but derogatory to the character of our body, and by no means beneficial to the public.

PHARMACEUTICAL QUACKERY.

While we are endeavouring to raise the professional standing of our body by the aid of protective legislation, it is incumbent upon us individually to discountenance and discourage whatever is calculated to detract from the character to which we are aspiring.

Quackery is one of the snares to which, from the nature of his occupation, the Druggist is especially exposed, and the temptation to take advantage of the mystery belonging to the healing art, by acting on the credulity of the public, is in some cases too strong to be resisted by those who take a narrow view of the subject.

The sale of an ordinary domestic medicine may be extended by a judicious exposition of its qualities and virtues, and we are not disposed to call in question the propriety of this practice, when nothing but the simple truth is stated. This is not quackery, although it subjects the article to the stamp duty.

But when worthless or dangerous compounds are extolled as specifics, or when even useful remedies are puffed in a manner inconsistent with truth, and calculated to delude the public, then the boundary between respectable business and empiricism is passed, and the vendor ranks with quacks. Quackery is not confined to illiterate and disreputable persons, although the types of the genus are of this order, and the most extravagant puffing is generally resorted to by those who possess the qualities of impudence and ignorance to the greatest degree; and when the "*suppression of quackery*" is talked of, the ordinary acceptation of the term is the prohibition of the practice of any branch of the profession by unqualified persons. Nevertheless, even a Fellow of the College of Physicians or Surgeons would be liable to the imputation of quackery if he were to endeavour to obtain an unfair advantage over his professional brethren, by promising to perform what is impossible, or professing a new system of practice as a means of gaining notoriety. A qualified Chemist in like manner might incur the same imputation by issuing nostrums with exaggerated eulogiums, and puffing them in a discreditable manner.

The sale of patent or proprietary medicines originated at a time when the profession was under great disadvantages, possessing very limited acquaintance with those branches of knowledge which now constitute a medical education. The healing art was generally believed to be intuitive, and it was supposed that some persons had "a gift" or natural power of curing disorders. The discoverer of a remedy was an object of envy and superstition, and great secrecy was observed in the application of such knowledge. Royal patents were frequently granted to these persons, securing to them the exclusive right of selling the new medicine. Although the term *patent* is still commonly applied to stamped proprietary medicines, these are rarely issued under letters patent, being merely nostrums the composition of which is kept secret.

In the mode of puffing these nostrums great ingenuity is frequently displayed. It is not unusual to commence by denouncing quacks and quackery altogether, commenting upon the dreadful evils resulting from the pernicious trash sold by ignorant pretenders, and then stating the circumstances which led to the important discovery of the valuable specific now offered to the public. If much stress be laid upon the *vegetable* nature of the compound, especially if this be accompanied with a tirade against mercury, then there is reason to suspect that corrosive sublimate is the principal ingredient, the term "vegetable" being used by quacks to denote the above preparation of mercury. Whatever may be the nature of the nostrum, it is recommended for the cure of a great variety of disorders, the lists of which are sometimes quite ludicrous, the most incongruous ailments being strung together as if they had been copied from the table of contents of an old work on the practice of medicine—for instance, hiccough, pleurisy, rheumatism, miscarriage, afterpains, rickets, all fevers, smallpox, griping of the guts, looseness, bloody flux, burstenness, vomitings, sore legs, &c., all of which disorders, with many others, are to be cured to admiration by the wonderful compound now offered. The testimonials from those who have ("through a blessing") "made trial" of the same with advantage, are curious specimens of infatuation if genuine, or of impudence and ingenuity if fictitious. In the directions for use care is taken to ensure the consumption of a certain number of bottles, and sometimes the proprietor takes the opportunity of recommending some other nostrum (also his invention) to complete the cure, or prevent a return of the complaint. In all cases a caution against counterfeit imitations is introduced *for the benefit of the public.* The following is a specimen from Daffy's Elixir :—

THE READER *is desired to take* Notice, *That they are not imposed upon by several* new sham Medicines, *lately sent about by ill-designed* men *as the coat of arms, the bottles are sealed——This* ELIXIR *has been counterfeited by many ignorant* Quacks *who know nothing of the preparation, and who make it their business to ride about the country offering their* rubbish *to* shopkeepers *at any rate.—in order to detect such* imposters *who are under prosecution for the same, observe for the future, that the printed bill of directions given with each bottle, have the* Crow *and* Sceptres *at the top of the arms ; without which you may be assured the* Elixir *is a* Counterfeit.

The printed bills of directions of this and many other quack medicines are sold by thousands to Chemists, who prepare the compounds themselves; thus in each case selling to the public one of the *imitations* denounced in the wrapper in which it is enclosed ! The imitation may possibly be an improvement on the original, but it must be enveloped in the original bill, otherwise it would not be appreciated. Many of these printed bills are remarkably quaint and absurd: as specimens of orthography they are curiosities. It is surprising that such documents should have any weight with the public, but they are much appreciated, especially by old women, whose grandmothers discovered the value of the remedy by experience in their childhood.

In introducing a new medicine to the notice of the public, certain rules are generally observed by experienced quacks, with respect to the mode and extent of advertising. The object in view is to make a sensation—to induce a belief that the new medicine is so undeniably valuable that it cannot fail to become a staple commodity. For this purpose, no expense must be spared. We are told that to spend £500 in advertisements would be useless under any circumstances. A thousand might be expected to yield a small return, and every succeeding thousand an increasingly productive harvest. When Morison launched his pills, he in the first instance divided a map of Great Britain into districts, appointing agents in every district, and simultaneously inundating every newspaper in the kingdom with his advertisements, and adorning every dead wall and park paling with his bills. The spirit with which he carried out his plans, the impudence of his puffs, and the extravagance of his doses, took the public by storm, and thousands fell into his trap. For a short time the game flourished. Young and old—rich and poor—the robust and the emaciated—swallowed the bait. Some were killed, others cured, but all paid for the pills. Morison died, and his pills died with him.

When we observe the manner in which the ignorant and unwary are gulled by this system of puffing, and when we consider the potent nature of many of the substances introduced into these quack nostrums, it cannot be doubted that thousands of lives annually fall a sacrifice to this infatuation, and it becomes a question for the legislature to decide whether this hazardous traffic ought to be tolerated. In the present state of the law, the responsibility is thrown upon the public, who rush into every snare which quacks spread forth, as a moth flies into the candle, and as flies plunge into a cup of tea. Unless actual fraud can be proved (as in the case of the "*vegetable*" mercurials), it would be difficult and perhaps unfair to punish the vendors of quack medicines for the mischief they produce, while the government sanctions these proceedings by deriving a revenue from the stamp duty. In France and other European nations the laws in this respect are remarkably strict, secret medicines and quackery in general being prohibited under severe penalties. There is, however, a distinction between the sale of quack medicines, and the practice of medicine by quacks. When a patient buys a secret nostrum and swallows it, he takes the risk upon himself. It may or it may not be applicable to his case, he is a free agent and tries the experiment. But when a patient resorts to a quack for advice, believing him to be qualified to give it, he resigns his own judgment, and the quack ought to be held responsible for the result. The following extract from a handbill is an illustration of a description of quackery which is particularly objectionable, as the author is a Chemist, who, by transgressing the boundary of his legitimate province, *injures our whole body* by furnishing an instance in which legislative interference appears to be called for. It is practices of this kind which bring discredit on Chemists in general, and while we claim on behalf of our brethren a discretionary power of giving a dose of medicine on an emergency, or in any simple case, we protest against a proceeding which, if found to prevail to any considerable extent, would frustrate our efforts by affording an unanswerable argument against us.

“PRO BONO PUBLICO.

“Should any one despair of relief after having taken all kinds of quack medicines (Morison's pills not excepted), with many other puffs and nostrums of the present day, they are invited to call at ——'s philanthropic establishment, where they can be supplied with remedies for their various ailments at a comparative trifling expense, and which in most cases will be attended with a speedy, safe, and certain cure.”

We have before us a specimen of a shopbill, in which the proprietor states, that “as he prepares his drugs, and compounds his medicines, he can answer for their goodness.” He gives a long list of remedies, among which are—

“Pills for cough and asthma, pills for pain in the back, pills for diarrhœa and looseness; and physicking pills strong and mild, often giving relief after once taking; he also makes plaisters of all kinds; his warm plaister is much esteemed; he likewise makes ointments of all kinds; his universal ointment is much esteemed for curing burns, scalds, wounds, and foul ulcers; and he makes lineaments of all kinds, one of which is very efficacious in curing sprains, bruises, stiffness of the joints, rheumatic pains, and often brings down a swelling in twenty-four hours; he also makes a very efficacious ointment for the piles, sure to give relief in one night; he has a cure for toothache, relieving it in one minute; he also compounds a cure for the gripings of infants, giving relief in half an hour; he also makes a compound for a pain in the back, generally curing it in two days. Physicians' prescriptions accurately prepared, and horse medicines compounded.”

This is followed by a list of oils, colours, &c. &c., including

“Slates, school-books, blacking, nails, flaws and tacks, shoemakers' nails, muds, and sprigs.

“Take notice, R. R. has a back shop where he keeps a provision store, and supplies families with flour, maslin, wheat, meal, split peas and whole, salt, and barley; also with groceries of all kinds, spices of all kinds, birdseed, soap, candles, tobacco and snuff, butter and cheese, potatoes, &c.

“R. R., wishing to make himself useful in the neighbourhood, has followed the business of Bookbinder and Glazier fifteen years, therefore he will be happy to bind any book or number of books sent to him, in the neatest manner, and on the shortest notice. He will also glaze any window or number of windows, or put in a single pane of glass (he has glass) on the most reasonable terms."

We give this extract, not for the purpose of criticizing the combination of trades (a custom unavoidable in small country towns), but to give an idea of the kind of establishment in which Physicians' prescriptions are compounded, and various ailments cured in definite periods of time. We could give many other specimens of a similar description, having received a considerable collection from various parts of the country; but the above is sufficient to illustrate the genus.

The editor of the *Lancet* has recently exposed the prevalent custom of fraudulently using the name of eminent medical men as alleged promoters of quack medicines, as in the case of "Ashley Cooper's pills," "Locock's pulmonic wafers," "Holloway's ointment," *said to be* "recommended by Dr. Bright," &c. This kind of imposition ought not to be tolerated, and although medical men may shrink from a controversy with the authors of such libels, they ought not to be subjected to the annoyance, and a summary process should be contrived by which the offenders could be punished. This forms a branch of the question of Medical Reform.

AMORPHOUS QUININE.

The following notice appeared among the leading articles of the *Lancet* of May 23d :—

> "We cannot allow the present number of our Journal to issue from the press without directing the attention of the profession, and the successful cultivators of the science of Chemistry, to the remarkable paper on Amorphous Quinine, from the pen of the celebrated Baron Liebig, which is published exclusively in the *Lancet* of this week."

This announcement, together with the paper to which it alludes, excited considerable interest in the profession, and many Chemists, availing themselves of the information (apparently) so disinterestedly given to the public by Baron Liebig, commenced a series of experiments on the subject, and made arrangements for supplying the public with the article thus prominently brought into notice. Much surprise, however, was occasioned by the discovery made shortly afterwards, that on the 13th of May (ten days before the publication of Baron Liebig's paper) a patent had been granted to a Chemist* in London for the preparation of this new remedy, as a communication from a foreigner residing abroad.

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* The patentee of the Amorphous Quinine is one of the managers of the Royal College of Chemistry, and sits at the Council table with noblemen and men of science, in the management of an institution established for the advancement of Chemistry and the application of such knowledge for the benefit of the public.

The first public avowal of this fact appeared in an advertisement in the medical journals, about the beginning of July, in which is recommended as a novelty "the pure alkaloid of Cinchona bark, in the form under which it has been described by Professor Liebig." It is stated, that "by possessing the AMORPHOUS QUININE, the prescriber has at command a whole series of salts. Thus he can at pleasure direct a citrate, tartrate, acetate, phosphate, nitrate, muriate, or sulphate, to be prepared extemporaneously, simply writing in the prescription, *acid* —— *q. s.*, and directions as to the proportion will be found on every bottle." (Hence it might be inferred that the *amorphous* quinine is the only kind possessing this advantage!)

The advertiser states, that "in order to protect the profession from errors or sophistication, he has deemed it proper to make the preparation of AMORPHOUS QUININE the subject of a PATENT: but he nevertheless assures the purchaser that he will sell it at the lowest price compatible with its purity!"

This reminds us of the following note by the philanthropic originator of "Godfrey's Cordial:"

"Note.—To prevent the public from being imposed upon by counterfeits, I have put my name on the top of the Bottles (as here), there being counterfeit sorts sold with the title of "Godfrey's Cordial" on the top of the bottles."

Dr.
Benjamin
Godfrey's
Cordial

There is a mystery which yet remains to be unravelled in connection with this case: for if, as stated above, the discovery of Baron Liebig was communicated for publication exclusively in the *Lancet* of May the 23d, how did it occur that a patent was actually granted for the same discovery ten days previously? and this having been the case, why was not the fact stated in the *Lancet* at the time the paper was published, which would have opened the eyes of the profession as to the real nature of the transaction.

We conceive that if Baron Liebig and the Editor of the *Lancet* were aware, at the time of the publication, that the discovery had been made the subject of a patent, it was their duty to announce the circumstance, instead of trumpeting forth a patent proprietary medicine, under the false guise of an important scientific discovery, purporting to be given as a boon to the public.

The Editor of the *Lancet*, alluding to the puffing of

"Preparations which are either universal, secret, or the objects of patents,"

observes—

"We hope to see the day when every man will from conscientious feelings, refrain from granting such certificates under any circumstances whatever, and when every one who desires well of his profession will take the most energetic means to remove any suspicion of collusion with quacks and quackery."—*Lancet*, July 25.

TRANSACTIONS
OF
THE PHARMACEUTICAL SOCIETY.

ABSTRACT OF A LECTURE ON THE CHEMISTRY OF PRUSSIC ACID.

BY THOMAS GRIFFITHS, ESQ.,
Professor of Chemistry in the Medical College of St. Bartholomew's Hospital

Delivered Wednesday, 24th June, 1846.

THE lecturer commenced by drawing attention to the fifty-five "elementary substances," of which he enumerated the following as comprised in the subject of his discourse, namely, carbon, nitrogen, hydrogen, oxygen, iron, potassium, mercury, and silver. As an illustration of chemical decomposition, the heat of a spirit lamp was applied to a portion of white prismatic anhydrous crystals in a tube, which, as the lecturer observed, decrepitates; a grey film ascends in the tube, a powerful odour escapes, and on the application of a lamp to the orifice of the tube a beautiful lilac or purple coloured flame appears. Three results are thus obtained: a grey film or sublimate, a brown fixed residuum, and an inflammable vapour; the first being mercury, the second a compound of carbon and nitrogen, and the third also a compound of carbon and nitrogen.

The vapour (which forms the foundation of the lecture) is heavier than air in the proportion of 1.82 to 1,00: it therefore descends, and may be easily obtained for experiment by heating the crystals above named (bicyanide of mercury) in a bent tube, the other and open end of which descends into a wide-mouthed bottle. The vapour soon fills the bottle and extinguishes a lighted taper immersed in it; but burns at the mouth of the bottle with its peculiar lilac flame. This vapour is highly poisonous and dangerous if inhaled. The composition is twelve parts by weight of carbon, and fourteen parts by weight of nitrogen, and is called bicarburet of nitrogen, or cyanogen. The latter name is derived from the Greek, and signifies "generator of blue," the compound being a constituent of Prussian blue. The compounds of cyanogen are termed *cyanides.*

Cyanogen cannot be formed by the direct union of its elements; but is generally obtained by the decomposition of animal matter, such as the cuttings of horns or hoofs, cellular membrane, greaves, and the refuse from the tallow-chandler. To these substances pearlash is added in the proportion of five parts of the former to one of the latter, and the mixture is heated to redness in a cast-iron vessel, and stirred with a flat iron paddle. Flame arises, and when this ceases the pasty mass is allowed to cool. The organic matters thus treated afford carbon and nitrogen in the proportions required for the production of cyanogen, a portion of which combines with the iron of the vessel, forming cyanide of iron or ferrocyanogen, and a further portion combines with potassium (liberated from the pearlash) forming cyanide of potassium. These two cyanides in the nascent state have an affinity for each other, and form ferrocyanide of potassium, which is dissolved by water. The solution being filtered and evaporated, the salt is obtained in the form of lemon-yellow crystals. When Prussian blue (or ferrocyanide of iron) is heated with binoxide of mercury in water, decomposition ensues, the result being sesquioxide of iron and bicyanide of mercury, from which cyanogen is obtained by the application of heat.

Prussic acid is a compound of cyanogen and hydrogen, from which it derives its name hydrocyanic acid; the term prussic acid denoting its origin from prussian blue.

Chemists are acquainted with two classes of acids, oxy-acids containing oxygen, and hydracids containing hydrogen. When bicyanide of mercury is acted upon by an hydracid,—as hydrochloric acid, the chlorine of the acid combines with the mercury forming bichloride of mercury, the hydrogen combines with the cyanogen forming hydrocyanic acid. (During the lecture the several manipulations were in progress, and a considerable quantity of anhydrous hydrocyanic acid was obtained).

Thus we obtain anhydrous hydrocyanic or prussic acid—a perfectly colourless limpid liquid, having an odour peculiar to itself, though frequently compared to that of the essential oil of bitter almonds: it is exceedingly volatile, and every care must be taken to avoid inhaling its vapour, even when largely blended with air. Inhaling the vapour produces death more rapidly than any other means of applying the acid: it is deadly when applied to the tongue or to any part of the body.

Prussic acid in this pure anhydrous and concentrated form, is the most deadly of all inorganic poisons. An able writer states, that if a glass-rod be dipped into it, and brought in contact with the tongue of an animal, death ensues before the rod can be withdrawn. If a bird be held a moment over the mouth of a phial containing the acid, it dies. An experimenter rashly spread a portion of the acid upon his bare arm, and he died in a few minutes.

The production of this anhydrous acid demands the talent of an able experimenter; it is exceedingly prone to spontaneous decomposition, and, for obvious reasons, these are two most fortunate circumstances. Prussic acid will sometimes decompose in the course of a few hours, and more especially when exposed to the influence of solar light. The acid deposits carbon, and evolves ammonia, from its ultimate elements assuming new and comparatively powerless arrangements.

Prussic acid is lighter than water, its specific gravity at the temperature of 45°, being = 0.705, it boils at 80°, and remains liquid at 40°, it hardly reddens litmus paper; it burns with a bright flame; and as analysis proves it to be a compound of 26 parts, by weight, of cyanogen, and one part, by weight, of hydrogen, its equivalent, or representative, or atomic number, is = 27.

Like other hydracids, if analyzed as regards the volumes of its constituents, it is found to consist of equal volumes of both, combined without change of volume.

Alcohol and water dissolve prussic acid in every possible proportion: the aqueous solution of determinate strength is used in medicine as a sedative; but to form this our Chemists do not generally take the risk of preparing the anhydrous acid, and then diluting it, they take the safer process of obtaining it at once in a proper state of dilution for medical use.

Prussic acid is not an educt but a product—that is, it does exist in the substances from which it is obtained, but is produced by mutual decomposition during the process. Ferrocyanide of potassium is not poisonous, yet it is the substance from which the Pharmacopœia directs hydrocyanic acid to be prepared by distillation with sulphuric acid. Sometimes the diluted prussic acid has a blue tint arising from particles of Prussian blue (formed during the process), being projected by the ebullition into the receiver. Sometimes it has a brown tinge induced by the action of light, which therefore ought to be carefully excluded.

Bitter almonds, and other kernels as well as many leaves, contain the elements of prussic acid, which is eliminated by distillation with water. When bitter almonds are pressed, a bland fixed oil is obtained, the residuary cake being bruised and macerated in water, yields by distillation the essential oil. This is produced from two constituents of the bitter almonds, amydagline and emulsine, which in the dry state do not act upon each other, but on the addition of water at a moderate temperature yield by mutual decomposition several compounds, among which is prussic acid.

Hydruret of benzule is another proximate constituent of the essential oil of bitter almonds, and this gives it the characteristic odour on account of which it is used for perfuming soap, bandoline, pomatum, &c., and also for flavouring custards and other culinary compounds. It is stated, that a manufacturer in Paris distils three hundredweight of this oil, which is used in enormous quantities for the above purposes. Great care is requisite in its employment, as it is not only a very powerful poison, but its application to the head in excess sometimes produces headache and giddiness.

In medico-legal enquiries touching cases of death suspected to be from prussic acid, great care should be taken to avoid the error of producing it by decomposition from the contents of the stomach when it did not actually exist there. In such a case the most lamentable results might ensue from mistaking a *product* for an *educt*, and the greatest caution should be observed in giving an opinion where any doubt whatever exists on this subject.

Neither animal matter nor carbonate of potassa contain hydrocyanic or prussic acid; but they contain its elements, viz. carbon, nitrogen, and hydrogen.

Calcine a mixture of animal matter and carbonate of potassa, examine the black ash that is left, expose it to the air, and it will emit a strong odour of prussic acid; or act upon it with hydrochloric acid, and you will obtain abundance of prussic acid. Why is this? Because the ultimate elements of the animal matter and the alkaline salt have newly arranged themselves. Carbon and nitrogen have combined to form cyanogen, potassium has been liberated; these two have combined to form cyanide of potassium, the moisture in the air has yielded hydrogen, the hydrochloric acid has acted similarly, and hydrocyanic or prussic acid has formed.

Such is the change: and thus from innocuous matters, by a new play of affinities, a poison is produced.

PHARMACEUTICAL MEETING,

JULY 8th, 1846.

MR. MORSON, VICE-PRESIDENT, IN THE CHAIR.

A paper was read containing

OBSERVATIONS ON A NEW VARIETY OF GAMBOGE FROM MYSORE.

BY ROBERT CHRISTISON, M.D.
Professor of Materia Medica in the University of Edinburgh.

In two papers, read before the Royal Society of Edinburgh, in March and December, 1836, I gave an account of the composition and properties of the gamboge of Ceylon, showing that in both respects it is identical, or very nearly so, with the more familiar gamboge of Siam, the only kind met with in European commerce, and proving that certain other gambogioid exudations from *Garcinia Cambogia*, *Xanthochymus pictorius*, and *Xanthochymus spicatus*, although they have been supposed closely to resemble ordinary gamboge, are really quite different in appearance, nature, and composition, as well as unfit for any of the well-known economic uses of that substance.*

I have been desirous of extending these inquiries also to the analogous products of other plants of the same natural family, the *Guttiferæ*, and more especially of examining the exudations, said to resemble gamboge, which have been observed by officers of the East India Company's Service,—first, on a tree in the forests of the Wynaad, in the western part of Mysore,—and, secondly, on one inhabiting the western Burmese territories, ceded to the Company after the last Burmese war. But for a long time my efforts to obtain the necessary specimens and information were unsuccessful.

In the interval some advance has been made by Dr. Wight, of Madras, towards determining the nature and botanical source of the supposed Burmese gamboge. This branch of the inquiry is, perhaps, of more practical interest than any other. For the districts where the Burmese gamboge is produced are nearly in the same latitude with Cambodia, where the commercial gamboge of Siam is known to be collected; the two localities are even at no great geographical distance from one another; and hence, were a true gamboge found to be produced on the western coast of the Burman Empire, a strong presumption would arise that its tree is the same with the unknown gamboge-tree of Siam. Upon this point I owe to the kindness of Dr. Wight some information which will show what is the present state of the inquiry. In a letter of the date of January, 1843, he observes,

> "I have lately received flowering specimens of *Garcinia elliptica* of which I have published a figure in my *Icones* as the gamboge-tree of Tavoy and Moulmein, and not improbably of Siam. There was sent along with the specimens a very small quantity of the juice, which was quite emulsive, although in itself a very bad and dirty sample. On trial it could be used readily as a pigment; but the colour was bad, whether naturally so, or owing to dirt with which it was mixed, I could not make out. The specimen was too small for me to examine thoroughly. A further and better supply was promised me. But the gentleman who interested himself in the inquiry was shortly after removed from that coast; and there the matter dropped. All the other juices of the *Guttiferæ* I have examined are resinous, and do not mix with water, in short are not emulsive."

I have not heard since from Dr. Wight on this subject; neither has he taken notice of it, so far as I am aware, in any recent publication.

In the month of May of last year I at length received intelligence of the gamboge of the Wynaad, and soon afterwards authentic specimens, of small size, yet sufficient for determining its nature and leading properties. My information I owe to Mrs. General Walker, the same accomplished and indefatigable correspondent to whom I was formerly indebted for the means of examining the gamboge of Ceylon. With these materials I made a short investigation without delay; and in December last the results were communicated to the Royal Society of Edinburgh. But I have more lately received, in the beginning of last May, additional information and specimens from Dr. Hugh Cleghorn, of the Madras Medical Service; who thus enables me almost to complete the inquiry. In the present paper my newer intelligence and observations will be incorporated with what was read at the Royal Society in an incomplete state, and therefore was not published.

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* *Companion to the Botanical Magazine*, ii., 233.

While residing not long ago at Cananore, Mrs. Walker learned from a party of the Company's Engineers, that they had observed what seemed to be a gamboge tree in the jungles of the Coorg country. This party had been for some time employed, under the command of Captain Cotton, Lieutenant Francis, and Lieutenant Walker, my correspondent's son, in tracing a projected road from Mysore, through the unfrequented jungles of the Coorg Ghauts, towards the Malabar Coast. In these operations they had to " penetrate dense forests, abounding with trees producing vast quantities of gums and resins," and, among the rest, with the tree in question. Lieutenant Francis states, that this tree was seen almost everywhere on the route from Cannanore to the Ghauts of the Coorg Country, and that at one place their encampment in the forest was quite surrounded by it. From this gentleman Mrs. Walker received a small specimen of the exudation, which she obligingly forwarded to me; and he added the remark, that he " could not detect any difference between it and the colour-makers' gamboge in tint; but on putting the brush into the mouth, it does not burn as it ought to do."

Dr. Cleghorn's observations were made last autumn, while accompanying in his professional capacity the same party of engineers, under the superintendence of Captain Le Hardy, in the north-west district of Mysore, near Nuggur. He observes, in his first letter, dated from that place on the 3d March—

"When accompanying our superintendent, Captain Le Hardy, in his autumnal tour, the gamboge-bearing tree was first observed near the north-western frontier of Mysore, as we were proceeding through an interesting, almost unexplored country, everywhere affording the most picturesque scenery, covered with jungle more or less dense, supplying abundant materials for the botanical traveller, and especially remarkable for the Gairsoopah Falls, where the river is precipitated over a vertical scarp 900 feet in height. * * The tree, which grows to an elevation of thirty or fifty feet, was met with along the tops of the Ghauts from Gairsoopah to Nuggur, a distance of fifty miles; and I understand it grows in greater abundance ten miles southward of this. It would appear that its range of elevation is between 2000 and 3000 feet, though it has also been seen sparingly on the sloping descent for some distance down the Ghaut. It is generally found in thick jungle, overtopped by the sago-palm and other forest trees of great height. The foliage is dense, the branches shoot out horizontally, two or three occasionally coming off in the same plane; and in general contour it reminds me in some measure of the box on a gigantic scale."

In a subsequent letter, dated at Anpoombie, 22d March, Dr. Cleghorn adds, that he found the tree in still greater abundance as he proceeded southward; and in another, dated a month later, he remarks, that on leaving the cool and humid range of the Western Ghauts, whose moist and shady slopes seem to afford a congenial climate, he lost sight of the gamboge-tree entirely. From a variety of accounts collated by Mrs. Walker, it has evidently an extensive range, having been met with by the engineer party along a tract of hilly country extending nearly 120 miles from north to south. It seems to flower during the rainy season of the Monsoon; at the close of which the yellow juice is said to be exuded in greatest abundance. It is called in the Canarese language *Goorgeemara,* or yellow gum-tree.*

The specimens of the juice sent to me were all in the concrete state. Those sent by Mrs. Walker present on a fresh surface a tawny, brownish-yellow colour, and glistening waxy lustre, exactly like fine Siam gamboge; and they show a tendency to the conchoidal fracture. They are free of odour, and, in correct language, tasteless; but I have not found them destitute of acridity, as Lieutenant Francis did; for in a few seconds after tasting a small portion an acrid impression was produced in the back of the palate, like what is occasioned by Siam gamboge. The Mysore gamboge is emulsive. Mrs. Walker's specimens are not quite so easily reducible to a fine emulsion with water as the superior qualities of that from Siam; but the subsequent specimens of Dr. Cleghorn seem to me not at all inferior in this respect to the best commercial gamboge. The emulsion presents the peculiar, brilliant, intense yellow hue of ordinary gamboge. When it is used as a pigment, I am unable to detect the slightest difference in tint from that variety. I put it into the hands of a skilful colourist, along with a specimen of the finest pipe gamboge of Siam, of a quality seldom met with in the colour-shops; and I received an opinion that the Mysore gamboge was not so easily rubbed down, and that upon paper the tint presented the slightest possible shade nearer brown; but nevertheless that it appeared a superior gamboge, undistinguishable from the gamboge of the shops except on the most narrow inspection. In stating this opinion, it is necessary to add, that the standard of comparison had obviously been collected with the greatest care, while Mrs. Walker's specimen had not this advantage, analysis proving it to be not quite pure; and that the specimen from Dr. Cleghorn, which proved to be considerably purer, is evidently more emulsive.

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* *Annalen der Chemie und Pharmacie,* xlv, 71. 1843.

The analysis of these specimens was performed nearly in the same manner as that of the Ceylon and Siam varieties, of which an account was given in my paper in 1836. These were found to consist essentially of an orange-coloured resin, very soluble in sulphuric ether, of gum, which is entirely and easily soluble in water, and of a little adhering moisture. But the Ceylon gamboge also contained more or less woody fibre, accidentally present owing to want of due care in collecting it; and the inferior qualities of Siam gamboge contained varying proportions of ligneous fibre and starch, owing to adulteration with the flour, probably of some leguminous seed. Since this analysis was executed, the same subject has been taken up by Dr. Ph. Buchner, who examined specimens of Siam pipe-gamboge and common Ceylon gamboge, presented by me to Professor Liebig; and he found, besides the proximate principles observed by me, a trace of brown colouring matter in the Siam specimen, and about four per cent of a similar principle in that from Ceylon. I have found this substance both in Ceylon and Mysore gamboge. A fine sample of the former, prepared under Mrs. Walker's instructions when she resided at Colombo, contains three and a half per cent of this matter, and has the following composition:—

Resin	74.8
Gum	16.5
Colouring Matter	3.5
Accidental Fibre	2.2
Moisture	4.0
	101.0

One hundred grains were used; the excess over which is owing to the obstinate adhesion of ether to the resin even at an elevated temperature. The colouring matter is obtained, after removal of the resin with ether, by acting on the residue with rectified spirit, and then evaporating off the spirit from this solution. The solution is colourless; but there is left a dark smoke-brown extractiform substance, which is soluble in water, and imparts to the water a brown tint.

The Mysore gamboge, like that of Ceylon, is in a great measure soluble in sulphuric ether, to which it communicates a fine orange colour; and the solution yields, when evaporated, an orange-coloured resin, identical in appearance with that from Siam gamboge. From the residuum rectified spirit, without acquiring any colour, removed a substance which was deposited on evaporation in the form of a dark smoke-brown extract, like that obtained from the gamboge of Ceylon. The matter unacted on by the spirit, immediately formed an emulsive solution with cold water, which, when evaporated, left an adhesive transparent substance, possessing the general properties of gum. Dr. Cleghorn's specimen left scarcely any residuum after the action of cold water; but that obtained from Mrs. Walker left about three per cent of particles of fibre and sand. From an analysis of 20 grains of each sample, a quantity however scarcely sufficient to yield very positive results, the Mysore gamboge seems to have the following composition :—

	I.	II.
Resin	77.0	80.0
Gum	14.0	14.0
Colouring Matter	5.0	5.0
Fibre and Sand	3.0	0.5
Moisture	Not determined	
	99.0	99.9

This composition is essentially the same with that of Ceylon gamboge, but indicates more colouring matter, more resin, and less gum than in the gamboge of commerce. These differences, however, do not materially affect its emulsive property; and as for the brown colouring matter, this seems scarcely to injure the purity of its hue as a pigment; for the brown colour is not developed until the principle has been detached by alcohol, and dried under exposure to the atmosphere.

It remains to inquire whether the Mysore gamboge possesses the remarkable effects of the Siam and Ceylon varieties on the animal body. My supply would not allow of many trials being made of its virtues: but three grains, triturated with a little bitartrate of potash, produced one copious evacuation ; four grains had the same effect. In another case four grains failed to move the bowels; and in another, five grains occasioned five profuse discharges. In every instance tormina were caused, and also sickness; and one person had several attacks of vomiting. The discharges were invariably very watery, yellowish, and abundant. This gum-resin, therefore, seems to exert the same action, attended with the same inconveniences, as ordinary gamboge.

It is put to very little use in India. According to the inquiries of my correspondents, the inhabitants of the district where it grows are not acquainted with its action on the animal body. Neither is it used as a pigment. But Dr. Cleghorn was informed by " an intelligent native from Canara, that the juice of the tree is occasionally used for colouring cloth in the low country," though not above the Ghauts; and a concrete oil obtained from the seeds is used, both in lamps and in making curries. From the observations made above, however, it is probable, that this gamboge may be advantageously applied to any use to which the gamboge of Siam is habitually put. At all events, it is an equally fine pigment; and as it may evidently be obtained in almost unlimited quantity, it may be introduced equally into European trade, once the natives learn how to collect it in a state of purity, and make it up in homogeneous masses in imitation of pipe-gamboge, the finest Siam variety.

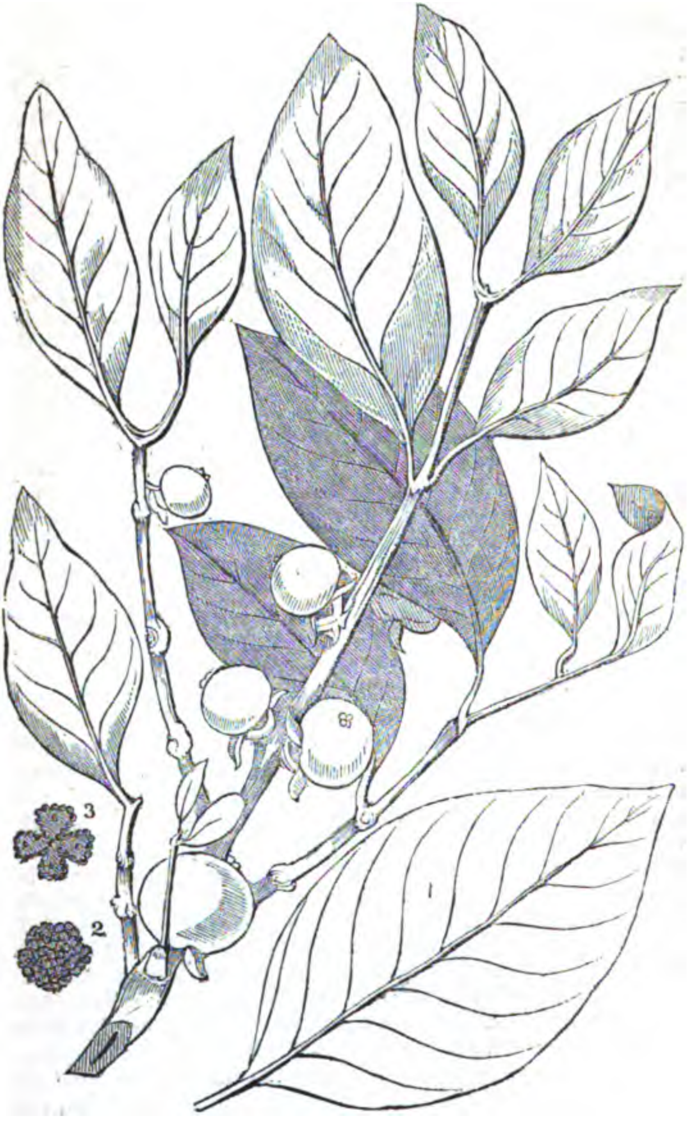
I have deferred till the close the opinion to which I have been led respecting the botany of this subject, because the information hitherto transmitted to me is incomplete, and not altogether satisfactory.

In 1836, my late colleague, Dr. Graham, came to the conclusion, that what I have described above, under the name of Ceylon gamboge, is produced by a plant, of which Linnæus in the first instance, and afterwards Murray of Göttingen, had given an incorrect account in consequence of their having confounded two very distinct species under one description, and which Dr. Graham was led to view as a species of a new genus under the name of *Hebradendron gambogioides*[†]. There can be no doubt of the error both of Linnæus and of Murray. But some botanists have considered Graham's characters of his genus as not sufficiently distinctive; and in particular Dr. Wight maintains that its characters are not such as to justify a separation of the species from the genus *Garcinia*[‡]. Both Dr. Royle and Dr. Lindley, however, have admitted Graham's genus.

I do not pretend to enter into the merits of this question. But it may be simply observed, that if Dr. Graham's new genus be a good one botanically, it appears to be also a convenient one in respect of its products; for every true gamboge-bearing tree yet known so closely resembles his plant, that there is a difficulty in establishing even specific distinctions between them. A very different species, the *Garcinia Cambogia* of Roxburgh, once supposed to produce gamboge, and indeed actually confounded by Linnæus with the true gamboge-tree of Ceylon, I have proved not to produce gamboge at all; the concrete juice being a very pale-yellow gum-resin, containing volatile oil, and not in the least degree emulsive[§]. But the *Garcinia elliptica* (*Wallich*) of Tavoy and Moulmein, which certainly produces an exudation resembling commercial gamboge, approaches very closely in its characters to Graham's *Hebradendron;* as may be seen on comparing the drawings of both in Dr. Wight's *Illustrations of Indian Botany*, table 44, and *Icones Plantarum Indiæ Orientalis*, table 120. The chief differences are, that in the Ceylon plant the flowers are "apparently verticelled round the articulations of the branches where the leaves have fallen (Wight)," while in the *G. elliptica* they are axillary and solitary; and that the leaves of the former are "obtusely attenuated at both ends, and vary from broad lanceolate to rhomboidal (Wight)," while in the latter they are "three times as large, obtuse, little attenuated at both ends, and shortly and abruptly acuminated." But the resemblance is even greater than Dr. Wight's description and drawings would imply; for in four specimens of the Ceylon plant which I have had an opportunity of examining, the old leaves are not at all attenuated at the apex, but abruptly subacuminate; which character indeed, though neglected by Dr. Wight, has been introduced among the specific characters of *Hebradendron gambogioides* by Dr. Graham. In like manner the Mysore tree bears an exceedingly close resemblance to that species. The resemblance indeed is so close, that the gentlemen of the party who discovered the tree on the Ghauts of Mysore consider it to be the same with the tree of Ceylon; and Dr. Cleghorn has communicated to me a letter on the subject from Dr. Wight, who, from incomplete data however, seems inclined to the same opinion. But plants, growing in different countries so distant from one another, may be more safely regarded as belonging to distinct species until they are proved to be identical. And in the present case I apprehend they will be found to be distinct, as the following description may help to show:—

[†] *Companion to the Botanical Magazine*, ii. 193.
[‡] *Illustrations of Indian Botany*, p. 142, 1840, et seq.
[§] *Companion to the Botanical Magazine*, ii. 244.

The botanical specimens, which I owe to the kindness of Mrs. Walker and Dr. Cleghorn, consist of twigs without flower, but with fruit, and of detached fruit of full size, some dry, others preserved in brine; and Dr. Cleghorn has added a drawing by a native artist, a copy of which is sent along with this paper. The leaves are opposite, petiolate, elliptic-lanceolate, attenuated at the base, obscurely subacuminate, four inches and a half long and two and a quarter broad when of full size, smooth, and somewhat coriaceous. The fruit, which is of the size of a cherry, is axillary, sessile, subrotund, or slightly ellipsoidal, supported by a persistent calyx of four coriaceous, subrotund, ventricose sepals, and crowned by a persistent, four-lobed, prominent, irregularly tubercled stigma. It is four-celled, and each cell single-seeded. In all my specimens of fruit the seeds had aborted, so that I cannot describe them. Scanty as these characters are, they indicate several points of distinction between this tree and Graham's *Hebradendron gambogioides*. For the full-grown leaves of the latter are somewhat obovate, subacuminate, and much more coriaceous; the sepals of the persistent calyx are membranaceous; and the persistent stigma of the fruit is broader, as well as very flat, and each lobe presents a regularly beaded circumference, with a depressed centre. The two stigmata are represented on the drawing I have sent of the Mysore plant.



**1. Full-grown Leaf, two-thirds the natural size. 2. Persistent Stigma magnified.
3. Persistent Stigma of Hebradendron gambogioides.—*Graham.***

It seems very probable that this plant is the same with the *Garcinia pictoria* of Roxburgh's *Flora Indica*[*], which was described from specimens and information supplied by Mr. Dyer of the Company's Medical Service, while he resided in the Wynaad, where the species I have described above grows. The description of Roxburgh, so far as it goes, corresponds very exactly with the specimens sent to me; and so does a drawing of a twig and detached fruit, which was presented by Mr. Dyer to Dr. Royle, and submitted to my inspection by the latter gentleman. Roxburgh indeed observes, that the gamboge from this species sent to him by Mr. Dyer was inferior in quality, and when used as a pigment proved to be not permanent; while the Mysore gamboge in my possession is both brilliant at first when used on paper as a colour, and has remained quite permanent for fifteen months. But Dr. Royle informs me that Mr. Dyer himself does not agree in opinion with Roxburgh, and ascertained that his gamboge is permanent in tint when employed as a water-colour. If I am right in conjecturing the two plants to be the same, and Graham's new genus be a good one, the Mysore gamboge tree will constitute a third *Hebradendron*, and its name will be *H. pictorium*.

AN ACCOUNT OF A SUBSTANCE RECENTLY IMPORTED FROM CHINA,

UNDER THE NAME OF VEGETABLE WAX,

Sent for examination by the Honourable the Commissioners of Customs.

BY ANDREW URE, M.D., F.R.S., &c.

This substance is of a brilliant white colour, and possesses the lustre and crystalline texture of spermaceti, but is considerably harder. Its specific gravity is 0.965, being a little denser than pure white wax, which is 0.963. Its melting point is 196° Fahr., while that of white wax is only 155°. It resembles wax only in being insoluble in alcohol of sp. gr. 0.805, and in not saponifying with alkali. Tallow stearic acid, when highly crystalline, resembles the Chinese product in outward appearance, but differs entirely by its ready solubility in the above strong alcohol, and its easy saponification. But these two substances resemble each other in distilling without decomposition; while wax does not.[†] It is combustible, and would make fine candles. This new Chinese product is, in my opinion, stearic acid generated from the fat of some sebiferous tree—to me unknown.

13, *Charlotte Street, Bedford Square, London,*
8th July, 1846.

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[*] *Flora Indica*, ii., 529.

[†] Tallow stearic acid melts at 138° or 140°, and has a specific gravity of 0.943.

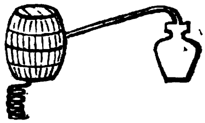
ON EXTRACT OF INDIAN HEMP.

BY ANDREW ROBERTSON, ESQ.,
Professor of Chemistry to the Medical College, Calcutta.

COMMUNICATED BY MESSRS. T. AND H. SMITH, OF EDINBURGH.

A NUMBER of pounds of the extract of hemp were prepared by me—I think upwards of thirty in all—for the purpose of having its medical properties fully tested by European medical men. A quantity went to Paris, another to Berlin, another to London, sent by different parties, and for my share of the matter I sent four pounds of it to Scotland, part of which went to you. I do not care about making more of it, as its preparation is most tedious and troublesome, in which I was tormented by the Excise regulations of the country, for both the plant and the spirits used are the subject of heavy duties and stringent precautions, and the cost price of the extract to me, counting nothing for trouble, was fully fifteen shillings per lb. Dr. O'Shaughnessy made his extract with alcohol, in a Papin's digester, at a heat above the boiling point of alcohol—the extract so obtained is brown; mine is of a deep green, and gives a grass-green tincture to alcohol, and has six times the activity of the brown, as ascertained by trial on hospital patients. If a speedy effect is desired it is given as tincture; if a deferred and protracted, as a pill.

As the process by which it was prepared is an idea of my own, since copied by others, and which probably may be claimed by them afterwards, I may mention it to you. It is a variation of the process of percolation, alcohol in vapour being the agent. A still, as per margin, was charged with strong spirits, and its nose introduced into the side of a cask in which the plant was pushed.



The vapour of the alcohol, and alcohol at a boiling heat thus acted on the plant, instead of cold alcohol in the usual mode of percolation. First issued a thin tarry matter containing much resin, latterly, a brown liquor containing little resin but much extractive. At this point water was substituted for the spirit in the still, and as much as possible of the spirit retained by the plant thus expelled from it. From the bottom of the cask a pipe led to a common condensing worm. Part of the alcohol was recovered from the fluid by distillation, the rest dissipated by evaporation in Wedgewood ware on a sand-bath, not exceeding the temperature of 150° Fahr. One hundred weight of the plant was used at one operation, and about eight pounds of extract obtained. The operation was conducted so slowly as in all its stages to last a fortnight.

The extract of hemp has been long known in the East in a most widely extended range of countries, under the names of Gunjah, Churrus, Hashish, Beng or Bang, the emerald cup of Haider, &c., and under every name renowned for its exciting and narcotic qualities. It is used by the natives here in the same way as opium is by the Chinese, and on that account is the object of fiscal regulations and duties. It is known throughout all India, Arabia, Syria, and Egypt. You will find it in the *Arabian Nights*, translated by Lane, under the name of Beng, as the narcotic used by Haroun Alraschid, and others. There cannot, therefore, be a doubt that it is a drug nearly as active as opium.

The inactivity of the drug, therefore, prepared in Britain, I can attribute only to faulty preparation and overheating, or to its being made from old and decayed plants. The good plant is of a greenish brown, the heads loaded with a sticky resin; the bad is palish brown and does not adhere to the fingers. The good extract gives a grass-green tincture, the bad a brownish. My extract was made from dried plants of good quality, as it cannot be readily obtained fresh in Calcutta.*

Mr. Fordred stated, that it had recently come to his knowledge that some of the extract, sold in London as extract of Indian hemp, was made from the plant grown in the neighbourhood of London, and he believed it possessed but little, if any, of the narcotic properties of the Indian plant. The extract made from the hemp (*Cannabis sativa*) grown at Mitcham, was of a green colour, and being apparently an aqueous extract contained but little resin, while that prepared from the plant grown in India contained a large proportion of resin. He thought it important, as many medical practitioners in different parts of the country were trying the efficacy of this remedy, that they should be cautioned to be particular in obtaining the extract of the *Indian* hemp.

Mr. Redwood said, that much of the extract made from the hemp plant imported from India, as well as the extract which had been imported ready made, was found to possess but little narcotic power when tried in this country; certainly they had not realized the expectations which were formed from the accounts of its action given by medical men in India. Dr. O'Shaughnessy, when last in this country, had admitted that the extract, even some that he had brought from India himself, had failed to produce the effects he anticipated, when tried in our hospitals; and he had undertaken, on his return to India, to have some extract very carefully prepared, and sent over to this country. Mr. Squire had received a quantity of this extract, and he presumed it was that alluded to in the paper just read, as having been made by Mr. Robertson.

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* The sample sent to us answers to the above description, a small quantity of which is sent with this paper.—T. and H. S.

Mr. Bartlett had witnessed the effect of a very small dose of extract of Indian hemp, obtained from Mr. Squire, on one of his assistants, and the action was that of a powerful narcotic. The young man stated that he felt all the symptoms of intoxication.

Dr. Ure had been recommended the use of extract of hemp, by his son; but although he tried it for some time, he never experienced the slightest effect from it. The extract was the same as the above, having been obtained from Mr. Squire.

The Chairman thought that the present state of medical knowledge, in reference to the action of Indian hemp, was very unsatisfactory and imperfect.

OBSERVATIONS ON SYRUPUS CROCI.

BY MR. CHARLES CRACKNELL.

Having suffered much inconvenience and annoyance from the separation of the colouring matter in the syrup of saffron, on the 29th November, 1845, I made the following experiments, with a view of finding a method of preventing the above disagreeable circumstance.

No. 1. Prepared some syrup according to the Pharmacopœia, with the exception of the infusion being made with cold water instead of boiling (a proceeding which I have long found retard the evil a little).

No. 2. Added to the sugar and infusion, mixed in the proportions ordered by the Pharmacopœia, an additional quantity of infusion obtained by a second digestion of the saffron, and boiled to a proper consistence.

No. 3. Added to the sugar and infusion, mixed in the proportions ordered by the Pharmacopœia, two grains of carbonate potash for every ounce of sugar, and dissolved the whole with a gentle heat.

No. 4. Proceeded as with No. 2, added two grains of carbonate of potash for every ounce of sugar, and boiled to a proper consistence.

When the syrups were first made, Nos. 1 and 3 were of the best colour, the boiling having considerably injured the colour of Nos. 2 and 4. In less than a fortnight No. 4 became very pale and extremely turbid; in a little less than two months (an unusually long time) No. 1 became unfit for use; shortly afterwards No. 2 gave way; but No. 3 possesses to this day all the transparency and aroma, and nearly all the colour (a portion may have been dissipated by undue exposure to light) it had when first prepared.

Although it may not be considered proper to deviate from the Pharmacopœia so far as to add the alkali above-mentioned, I think it right to make known the fact, that the difficulty experienced in preserving this syrup may be thus obviated, and to suggest this mode of making the syrup to the authors of the Pharmacopœia.

105, *Edgware Road.*

Mr. Fordred said, that a method of preserving syrup of saffron from undergoing decomposition had lately come under his notice, which consisted in evaporating the syrup to dryness, and keeping it in the state of powder, which was dissolved in water when dispensed. He was unable to state how far this succeeded.

SCIENTIFIC COMMITTEE
FOR THE ADVANCEMENT OF
PHARMACOLOGICAL KNOWLEDGE.

The following Queries were issued by this Committee last year, and were read, together with the accompanying Answers, at a meeting of the Pharmaceutical Society, on the 11th of February, 1846; but their publication was deferred until specimens of the leaf and flower of the plant referred to could be obtained for examination.

QUERIES RESPECTING RHUBARB CULTIVATED IN THE NEIGHBOURHOOD OF BANBURY.

1. How many persons cultivate rhubarb for medicinal use in the neighbourhood of Banbury? State their names, and the number of acres occupied by each person.

2. For how many years has medicinal rhubarb been cultivated in that locality? What number of persons are employed in its cultivation and preparation for the market?

3. Is more than one species cultivated? If so, how many? By what names are they popularly distinguished? Specimens of all the species cultivated, either fresh or carefully dried, should be forwarded. The specimens should include *root, stem, leaves, flowers,* and *seed.*

4. At what age and in what season is the root dug up for medicinal use? What are the uses respectively made of the root-stock and root-branches? Are both employed for yielding the medicinal rhubarb of the shops? Is the stick English rhubarb prepared from the root-branches?

5. Describe the mode of preparing the root for the market; including the cleaning, slicing, drying, and other operations. Is the root dried at ordinary temperatures in the air, or by the aid of artificial heat? If the latter, is it effected by the heat of a stove or a kiln; and at what temperature? What varieties are made of it in commerce, and what are the names by which these are known?

6. What uses are made of the *leaves* and *leaf-stalks*? Are the latter sold for the table? Is wine ever prepared with them? If so, a sample to be sent. Is there reason to suspect that the leaves are used for adulterating tobacco?

7. Which is the principal mart for English rhubarb root? Is it entirely consumed in England, or is any of it exported? What is the average price of it?

8. Is rhubarb cultivated in other parts of England for medicinal use? If so, where and to what extent?

ANSWERS TO QUERIES,

RESPECTING THE CULTIVATION OF ENGLISH RHUBARB, NEAR BANBURY.

BY MR. WILLIAM BIGG.

1. Three parties cultivate rhubarb root for sale, in the neighbourhood of Banbury, viz. Rufus Usher, of Overthorpe and Bodicott; Thomas Tustian, of Milcombe; and Edward Hughes, of Neithorp. The exact number of acres is not known, but probably does not exceed twelve altogether. On some portion of such land other crops are occasionally grown.

2. The cultivation of rhubarb for medicinal use was first undertaken in this neighbourhood by a surgeon and apothecary, named Hayward, about fifty years ago. That gentleman died in the year 1811. His widow (of a second marriage) is living, and states that Mr. Hayward, having communicated the results of his experiments to the Society of Arts, in London, received from them two medals—one of gold, the other of silver. The number of persons employed in the cultivation, &c., does not, probably, exceed six or eight — men, boys, and sometimes women.

3. Only one species is in cultivation for medicinal sale: the *Rheum Rhaponticum*. It has no distinctive popular name. Specimens of the seed and of the prepared root are forwarded. (The stem and leaf procured are decayed).

4. The root is suffered to grow from three to four years in the ground, and does best in a light sandy soil*. If it were

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* Mr. Atkins, of Northampton, who is an authority on such things in general, says that a cool rich soil suits it best.

allowed (if they could afford to let it) to grow longer it would be all the finer and better. It is dug up in the month of October, or sometimes November. The root stock is what they call "*trimmed*" in large pieces (as specimens sent). The root branches ("*fibres*") go into the market as "*cuttings*." The third form in which it enters into commerce is that of "*raspings*," these being the produce of the process of "trimming." The cuttings are most likely to acquire the name of the "*stick English rhubarb*."

5. The slicing, &c. I must defer till further information can be obtained, observing that I believe there is some precaution necessary in barking or stripping the root, so as not to pull off more than the true rind.

The root is dried in "drying-houses," heated by stove pipes or brick flues. The root when prepared for the drying-house, is placed on a flat piece of basket work—some three feet long by two feet wide, and that is suspended by means of strings from above, over the pipe or flue—first at a considerable elevation (similar shelves containing root in a more advanced condition intervening), and gradually nearer as the process matures. There is great care requisite in conducting the process of drying—in *graduating* it; for if the root in a recent condition were subjected to the temperature to which it should be subjected in the final stage, it would become unsaleable, and they say "black in the *inside*." The "cuttings," "fibres," or root-branches, are pierced and strung, and so hung up in the drying-house. The trimmed are pierced only to give them uniformity of appearance with the foreign.

6. Of the leaves, I believe no use is now made, except the use common to all vegetable offal—manuring. The leaf stalks are now very partially sold for the table. In former years, the sale of the leaf stalks formed a part of the trade, but it can scarcely be said to do so now. Wine has been occasionally made of them, but not to any important extent. Curious housekeepers here and there make a little to increase the variety of the table at the village "wake." The leaves were some years ago in demand (I have reason to think) for the adulteration of tobacco, or the manufacture of cigars, but are not at present.

7. The principal, and with a small exception, the only mart for English rhubarb root is London. It is there purchased by the wholesale druggists, who would probably state that a great part of it is subsequently exported. Some of it is sold no doubt to the Jews and Turks *as English*, but I strongly suspect that a much larger portion is sold to the Christians as *foreign*.

The "cuttings" make I dare say a very decent powder, mixed according to conscience with East India rhubarb. The price is variable, and though I have often in the course of the last ten years heard it quoted, I cannot trust my memory for a figure[†]. The "trimmed" is of course the highest—from two-thirds more to double the price of the "cuttings."

I have heard it stated on computation that not less than about twenty tons are, in the various forms described, annually sent into the market.

8. I know of no other place in which rhubarb is grown for medicinal purposes in a wholesale way. A field of rhubarb when in flower—the stalks from six to ten feet in height—has a very striking appearance, and cannot be passed without observation.

The leaf-stalk grown in private gardens is not unfrequently preserved with sugar, and is recommended in that form by Dr. Kerr, of Northampton, as a laxative.

NOTE ON BANBURY RHUBARB.

BY DR. PEREIRA.

Much interesting and valuable information respecting the cultivation of rhubarb in this country is contained in the *Transactions of the Society for the Encouragement of Arts, Manufactures, and Commerce.*

Mr. Wm. Hayward, Apothecary, of Banbury, appears to have been the original cultivator of rhubarb in that locality. In a letter, dated October 29th, 1789, addressed to Mr. More, Secretary to the Society of Arts, Mr. Hayward states, that he had been a cultivator of "the true Turkey rhubarb" for about twelve years; and "had so far succeeded, as to have disposed of and used, within the last three years, more than two hundred weight of that article;" and he, therefore, offered himself as a candidate for the Society's premium for promoting the culture of this useful drug. (*Trans. Society of Arts*, vol. viii., pp. 75, 76, 1790.) It appears, however, that Mr. Hayward, not having fully complied with the terms specified in the Society's advertisement, could not be admitted a claimant; but the Society, in consideration of his merit, and to promote, "as much as in them lies," the growth and culture of so valuable a drug, voted their silver medal to him as a bounty.

In a letter, dated Banbury, Jan. 29th, 1794, Mr. Hayward offered himself as a candidate for the Society's gold medal, being the premium offered for raising the greatest number of rhubarb plants, and which was adjudged to him by the Society. (*Trans.* vol. xii., pp. 225-229, 1794.)

[†] The large pieces fetch more, in proportion to their size. The prepared root is rubbed over with powder, and sometimes when damp with ochre.

The plant for which the Society offered the premium was the "*Rheum palmatum*, or true rhubarb" (see *Trans.* vol. vii., p. 281; and vol. xi., p. 285); and Mr. Hayward speaks of the plant which he cultivated as being "the true Turkey rhubarb;" while the certificate which accompanies his second letter describes the plants as being "the true rhubarb." But from the evidence I have been able to obtain, it appears that the only species of Rheum ever cultivated at Banbury is Rheum Rhaponticum. Independently of the statement of Mr. Bigg (who sent a leaf of the Banbury plant [Rheum Rhaponticum] to the Pharmaceutical Society), I have received from Mr. Rye, Surgeon, of Banbury (formerly one of my pupils), a flowering plant of the Rheum cultivated in that neighbourhood, and which proves to be Rheum Rhaponticum; thus confirming the accuracy of Mr. Bigg's statement. Mr. Rye writes to me thus:

> "I have succeeded in tracing the Banbury rhubarb plant through the present grower (from whom I obtained the specimen sent to you) to his father, who purchased the plants from a Mr. Hayward, a medical practitioner of this place, the original cultivator, and the person who obtained the medal for producing the *genuine Turkey Rhubarb plant* (so called), which, I am certain is the same Rheum Rhaponticum; and I have carefully compared the plants grown by the other cultivators, and find that they are the same, and that no other variety or species was ever cultivated at Banbury. Usher, who is the most intelligent, says that he cannot produce English rhubarb from any other kind, and that he has tried the 'Giant rhubarb' without success. He also states most confidently that no other species was ever cultivated but the one sent to you."

Cultivation.—Mr. Hayward describes two methods adopted by him for the cultivation of "Turkey rhubarb," the one from seed, the other from off-sets. By the latter method (now followed) the root is much sooner brought to perfection than when produced from seed; and the specimen sent by him to the Society of Arts was produced in that way "in the short term of four years." Several off-sets may be procured from every plant by dividing the head into many parts at the time of taking up the roots, either in spring or autumn. If intended for future removal they are to be planted at two feet apart; but if intended to remain for a crop, an interval of four and a half feet should be allowed. (Hayward, *Trans. Soc. Arts*, vol. viii. and vol. xii.)

> "*Method of curing Rhubarb.*—The plants may be taken up either early in the spring, or in autumn when the leaves are decayed, in dry weather if possible, when the roots are to be cleared from dirt (without washing): let them be cut into pieces, and with a sharp knife freed from the outer coat, and exposed to the sun and air for a few days, to render the outside a little dry.
>
> "In order to accelerate the curing of the largest pieces, a hole may be scooped out with a penknife; these and the smaller parts are then to be strung on packthread, and hung up in a warm room (I have always had the conveniency of such a one over a baker's oven), where it is to remain

till perfectly dry. Each piece may be rendered more sightly by a common file, fixing it in a small vice during that operation; afterwards rub over it a very fine powder, which the small roots furnish in beautiful perfection for this and every other purpose where rhubarb is required."—(Hayward, *Trans. Society of Arts*, vol. viii., pp. 81, 82.)

LIST OF MEMBERS,

ASSOCIATES, AND APPRENTICES (*continued*).

Elected in June.

MEMBERS.

BATH	Mann, Samuel L., 13, Northgate Street
BISHOP AUCKLAND	Etherington, Joseph, Newgate Street
GREENWICH	Chapman, James E., 77, Church Street
HARROGATE	Waite, William, Westmoreland Place
KNOTTINGLEY	Pinder, William, Aire Street
LEAMINGTON	Pratt, Edmund, Regent Street
LONDON	*Fordred, John, Church Street, Hackney
	Wootten, William, 10, Mount Street, Islington
STAMFORD	Althorp, James
TURPORLEY	Oulton, William, High Street

MAJOR EXAMINATION.

Stutchbury, Joseph	7, Poultry, London

MINOR EXAMINATION.

Barkley, William	Tower Street, London
Grindley, R.	Chester
Trask, Thomas	Croydon

REGISTERED APPRENTICES.

APPRENTICES.	RESIDING WITH	TOWN.
Christmas, Robt. Denn	Mr. Markland	Great Yarmouth
Hodge, Henry Cotty	Mr. Eyre	Launceston
King, Henry	Mr. Markland	Great Yarmouth
Potter, William	Mr. Freeman	London
Stagg, James H.	Mr. Owles	Great Yarmouth
Wakeford, Theophilus	Mr. Dowman	Southampton
Wyatt, Henry	Mr. Wyatt	Torquay

ORIGINAL AND EXTRACTED ARTICLES.

ON THE REPUTED PROPERTIES OF SOME OF THE SPECIES OF CLEOME.

BY W. HAMILTON, M.B.

The order Capparideæ, furnishes many valuable genera, and some which are regarded as deleterious, dispersed throughout the Antilles, among these the genus Capparis presents many, which, when in blossom, are of great beauty, and of these I met with the true Caper bush (Capparis spinosa) growing apparently wild among the ruins of some houses in the direction of Fort Piccolet; but as I never observed it in any other locality, I am inclined to believe its existence there to have been the result of foreign introduction, and not spontaneous growth.

But it is to the genus Cleome I propose at present to confine my observations, as there are many species indigenous in most of the islands, and known from their sensible properties—"Bastard Mustard." They all possess, in a greater or less degree, the acrid pungency which is the general characteristic of the order, and are not unfrequently to be met, as substitutes for the similar salads of Europe, at the tables of the planters. Among the number, however, are some few, which claim a higher distinction, and enjoy a certain degree of Pharmaceutical reputation.

To this class belongs the Cleome pentaphylla, a species noticed by Hughes, in his *History of Barbadoes*, under the name of "Coyers," and which I have always known under the more common name of "Sambo."

According to the testimony of Hughes, the juice of this plant mixed with a little olive oil and poured warm into the ear, affords instant relief, in cases of severe ear-ache. It must be obvious, however, to every one conversant with pathology, that in cases of true otitis, no reliance can be placed upon remedies of this description, and that where phlegmonous inflammation has actually arisen, our only confident reliance must be placed upon the local abstraction of blood and counter-irritation, by means of blisters, along with the other antiphlogistic treatment customary in such cases.

But there are cases of ear-ache, unattended with acute inflammation, in which such remedies as the juice of the Cleome deserve a trial, and may be of service; of this description was the following case, recorded by Dr. Anthony Robinson, in the unpublished manuscript to which I have before referred:

> "A gentlemen of St. Elizabeth's informed me," says the doctor, "that for some years he had been at times afflicted with violent pains in his left ear, so that at last he could hardly hear on that side; he had little or no wax

at any time in it, and sometimes felt such an uneasy sensation, as one perceives when a flea or other small insect gets into it; that a few days before he saw me, he had pulled a living insect out of it. He said, when the pain was most raging, he had, by the advice of a negro woman, taken a leaf of the Cleome tertia procumbens pentaphylla of Browne, and, upon squeezing a few drops of it into his ear, he had been instantaneously relieved from pain."

Such is the statement of Dr. Robinson, whose authority merits respect. Beyond the qualities which it shares with most of the Capparideæ, I never heard it spoken of during the entire period of my residence in the West Indies; nor do I recollect to have had my attention once called to any medicinal properties which it possessed. However, my want of information is not to be put in competition with such a statement coming from such an authority.

The same attention, which has been already more than once suggested, should be paid to the period of growth at which the energy of the plant is in its highest vigour; and which will be probably found about or a little before one of the full moons, in the vernal quarter of the year.

The Cleome polygama, which is the "Sinapistrum indicum triphyllum, flore carneo, non spinosum," of Sloane, is also said by Barham, to possess similar properties, and its expressed juice is employed in the same manner, in combination with oil, to remove deafness: as to the manner of its operation, he furnishes us with no information: it would, however, appear to act as an anodyne. He speaks of the whole plant as balsamic and vulnerary, and tells us that he has seen sores healed by the application of the leaves, which he says, also give ease in gout. He recommends a decoction of them in oil, as an external application in cases of lepra and cutaneous affections. Their decoction in water he also speaks of in high terms, but apparently tinctured with a somewhat unprofessional credulity. A cataplasm of the bruised leaves is likewise recommended in cephalalgia resulting from cold.

I repeat these suggestions as I find them, from a conviction that it would be equally unwise to attach to them an importance beyond their deserts, and to treat them with supercilious contempt. Popular opinions are not always founded in error, and should not be rejected without strict examination. I have no personal acquaintance with the medicinal properties of the plants in question, but I would not the less recommend them to the attention of medical men resident where they are found, and suggest the extension of their experiments to the other species which abound within the tropics.

14, *Octagon, Plymouth.*

ON THE CAPPARIS CYNOPHALLOPHORA, OR BOTTLE COD.

BY W. HAMILTON, M.B.

Having in a former paper noticed some plants belonging to the family of Capparideæ, and tribe of Cleomeæ, I shall now call attention to some of the second tribe, or true Cappareæ, distinguished from the former by the fleshy character of their fruit, while that of the Cleomeæ is a true dehiscent capsule, partaking in no respect of a fleshy character: as for the character of *indehiscence*, ascribed by De Candolle to the fruit of the Cappareæ as distinguishing it from the dehiscent membranaceous capsule of the Cleomeæ, I can only say that, as far as my own experience goes, it cannot be regarded as applying with strictness to those species of Capparis with which I am acquainted, and more especially to the Capparis cynophallophora, or bottle cod, whose fleshy fruit, or subbaccate silique, as De Candolle terms it, opens when fully ripe, displaying its seeds imbedded in a kind of scarlet arillus.

The genus Capparis is most fertile in West Indian species, from the number of which the Capparis spinosa, or true caper bush, which I met in a state of apparent wildness at Cape Henri, must, as I have before observed, be excluded, since, notwithstanding the wild and neglected state in which I found it, there can I think be little doubt of its exotic origin.

Among those species of whose claim to a West Indian origin no doubt whatever can be entertained, I shall first notice the Capparis cynophallophora, or bottle cod, the shrubby breynia of Browne's Jamaica, a small tree or shrub abounding in the hedges of Nevis, and other islands, where I was first struck with the beauty of its large white polyandrious blossoms, from March to October, with their long stamina projecting far beyond the petals, the whole exhaling a most delicious fragrance. These are succeeded by a long subcarneous fruit, often twelve inches in length, opening when ripe in two valves, which gradually roll themselves back, displaying their seeds, and the pulp or arillus in which they are imbedded. This plant is known to the French by the name of *Pois mabonna.*

The young buds and leaves enjoy the reputation of counteracting the causticity of the milk of the manchineel. Its large, yellow, fleshy root partakes strongly, like that of the Moringa pterygosperma, of the flavour of horseradish, and like it too has its qualities impaired by heat. Its infusion is reputed to be diuretic, and has been employed with success in some cases of dropsy.

The flavour of the young flower buds is more pungent and less agreeable than that of the flower buds of the Capparis spinosa.

The properties ascribed to the bottle cod, are no doubt, common to all the other species of Capparis, and deserve a more careful examination.

14, *Octagon*, *Plymouth.*

ON PIGMENTS.

BY DR. J. A. STOECKHARDT.

THE employment of any coloured compound, whether organic or inorganic, as a pigment, depends on its *beauty*, its *durability*, and its *cost*. To these conditions should be added its *harmlessness*. Mineral pigments enjoy the first rank with respect to brilliancy and durability. Many of them are solid chemical combinations, as cinnabar, pure chrome yellow, oxide of iron, &c. ; but most of them are prepared by mixing these solid chemical compounds with white substances, by which are produced the various tints possessed by the pigments found in commerce. The choice of these white or diluting substances is chiefly determined by their price, and by the nature of the principal colour, which must not be altered by them. At present the following are mostly used for this purpose :—*Alumina, white clay, heavy spar, chalk, gypsum, alabaster*, and *starch*. To these must be added, especially for yellow and white colours, *sulphate of lead*. The difficulty in recognising and distinguishing pigments is increased by the indefiniteness of the usual nomenclature employed in trade. Not unfrequently a new chemical compound, which in consequence of its greater brilliancy or other properties has superseded an older one, inherits the name of the latter. Often also names are purposely changed by merchants for new ones, which are more attractive. In this way arose the host of synonymes which we find chiefly among the arsenical copper colours (*arsenik kupferfarben*). For these reasons it is impossible to infer the chemical composition of a pigment merely from the name it bears; but we must resort to chemical tests to enable us to ascertain the nature of the substance. I have in this way examined hundreds of pigments of all kinds, and from the results thus obtained have drawn up the following list. In consequence, however, of the extent and constantly varying nature of the materials, this list must not be regarded as absolutely complete, or as permanently accurate; but in general it will be found nearer the truth than those vague and antiquated statements on this subject, which are contained in chemical and technicological works. The products and price-currents of thirteen of the principal chemical and colour manufactories of Germany have been employed in the preparation of this work. In the quotation of prices the price-currents of all the thirteen manufacturers have been consulted, but the different sorts are quoted only from the one which contained the greatest relative variety.

BLUE PIGMENTS.

I. SULPHURET OF IRON, SULPHURET OF SODIUM, and SILICATE OF ALUMINA go in trade by the names of *lapis-lazuli blue ; azure blue ; artificial ultramarine ; Vienna, Meissner, and Nuremberg ultramarine ; ultramarine of Guimet, Leverkus, and Leykauf.*

The natural ultramarine which is obtained by carefully washing the lapis-lazuli, and which was formerly paid for by its weight in gold, has almost entirely been superseded by the artificial imitation of the same (first made by Gmelin), as well as by cobaltic ultramarine ; so that it is now only used in fine oil painting. The artificial azure blue is obtained by carefully heating *kaolin* or clay with soda and sulphur, and then repeatedly washing it. It owes its colour, according to Elsner, to the accidental presence of iron in the substances employed. It forms a delicate beautiful blue powder, which is easily decomposed by acids, but not by alkalies, light, or heat: it retains its beautiful blue colour in artificial light; it is as frequently used as a lime-colour as an oil and water-colour. There are only a few sorts of it in commerce; price from 1¼ to 18 dollars* per lb.

II. Oxide of Cobalt and Alumina are known as *cobaltic ultramarine*; *cobalt, ultramarine*, *Thenard's*, and *Höpfner's blue*; rarely as *Louisa blue*.

To obtain this exceedingly bright and durable colour pure hydrate of alumina is obtained by precipitation from alum, by means of a solution of caustic potash and pure hydrated oxide of cobalt by the decomposition of some salt of cobalt by caustic ammonia. The precipitates are then intimately mixed together in a moist state, dried and ignited. The finely ground substance is sold either as a powder, or in light very friable pieces. By daylight its colour is of a beautiful blue; but by candlelight its beauty is lost, and it acquires a red tint. It is used for water, oil, lime, and enamel-colours. There are about ten sorts of it, and their price is from 8 to 40 dollars per lb.

The Saxon manufacturers of blue pigments sell under the same name an *aluminous earth coloured blue, with phosphate or arseniate of oxide of cobalt.*

III. Cobalt Glass finely ground is sold as *smalt*; *eschel*; *sumpfeschel*; *Saxon blue*; *blue colour or starch*; *powder blue*; the purest and darkest sorts as *king's blue*, or *emperor blue*.

Smalt is prepared in the blue colour manufactories (of which there are four in Saxony), by melting together quartz and potash with roasted cobalt ores in crucibles. The glass which is more or less intensely coloured according to the quantity of cobalt used, is cooled in cold water in order to render it brittle. It is then ground between mill-stones and washed. The more coarse, and therefore more intensely coloured powder which first deposits, goes by the name of *couleur* or *farbe*; the dust-like particles which settle afterwards are called *eschel*. Although the arsenic which remains in the roasted cobalt ores separates, during the process of fusion, and is found at the bottom of the vessel combined with nickel, bismuth, silver, &c., as *nickelspeise*, still part of it remains usually with the glass, and constitutes an impurity which can easily be discovered by Marsh's process.

From the light blue tints the arsenic can easily be extracted by merely boiling them with water. Smalt is a very durable colour, and is often used as water and enamel-colour; but it does not cover well; in consequence of which it is seldom used except as powder blue, and strewed over a half-dried varnish coating. About twenty sorts are met with. Their price is from 10 to 80 dollars per cwt.; of king's blue there are only a few sorts, price from 1 to 8 dollars per lb.

IV. The Double Cyanides of Iron are met with in two forms: *A*. Insoluble as *neutral* combinations. *B*. Soluble as *basic* combinations.

A. 1. Pure as *Paris blue*.

A. 2. Mixed with white bodies, as *Berlin blue* and *mineral blue*; under the first denomination, chiefly the darker sorts; under the latter, the lighter sorts. It is also called *blue ochre*, *Prussian*, *Saxon*, *Louisa*, *Zwickauer*, *Erlangen*, and *oil blue*.

It is produced by mixing a solution of sulphate of iron with prussiate of potash, and carefully heating the light precipitate which is formed with nitric acid, till it assumes a deep blue colour. The white substances used for the finer sorts are alumina, gypsum, and heavy spar; for the more common sorts, starch or clay. The *Paris blue* forms intensely blue light pieces, and when fractured presents a coppery glistening appearance. which disappears on being rubbed with hard bodies (in the case of indigo, friction produces the coppery glistening appearance). *Berlin blue*, on the contrary, is, when fractured, dull and earthy ; the darker sorts being heavy and compact ; while the paler kinds are light and readily colour other substances which they touch.

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* The dollar is = 3 shillings.

[The author has omitted to notice *Turnbull's blue* and *Chinese blue*, both of which pigments are double cyanides of iron.]

B. Prussian blue is *soluble* in water if it combine chemically with a superabundance of oxide of iron, or prussiate of potash (*basic Berlin blue*, and *soluble Paris or Berlin blue*), or by applying to it a solution of oxalic acid (*washing tincture, blue liquor, blue ink*) ; starch coloured with a solution of Prussian blue is called *new*, *washing*, *water*, and *Hortensia blue.*

[*Stephens's blue ink* and the *patent Giessen blue* consist of Prussian blue dissolved in water by means of oxalic acid. Each of these liquids has been made the subject of a patent.]

The insoluble Berlin blue, or Paris blue, is an excellent body colour for oil and water painting ; but the soluble is particularly used as a transparent colour and for blueing linen.

Both are decomposed by alkalies, which separate the brownish yellow oxide of iron ; and they cannot, therefore, be used as lime colours. This is the reason why linen blued with this pigment assumes, by repeated washing, a yellow tint ; and indigo colours, therefore, which go by the same name are to be preferred for these uses. About sixty sorts are met with. Their price is from 4 to 70 groschen† per lb.

V. Copper Blue, *carbonate of copper, with hydrated oxide of copper and lime*, are called *mountain blue ; English, Hambro', lime, Kassler, mineral, mountain*, and *Neuwieder blue.*

This combination corresponds in its hue to native blue Malachite. It is obtained by a particular process (which at present is in part kept secret) by decomposing subchloride of copper by a solution of caustic potash, and afterwards mixing the mass with caustic lime, and exposing the mixture for some time to the air. When the greenish-blue colour has become a pure blue, the mass is dried and ground into a rather coarse crumbling, or dust-like powder. The darker sorts contain often only a small per centage of quick lime, but the lighter sorts on the contrary, from 20 to 70 per cent.

A beautiful blue light preparation is met with in commerce under the name of *French mountain blue*, which sometimes contains only traces of carbonic acid.

Mountain blue is used as lime colour, but chiefly for colouring rooms, on account of its unchangeability on lime grounds ; sometimes as enamel colour instead of oxide of copper. Only few sorts are met with. Their price is from 15 to 35 groschen per lb.

VI. Indigo is met with under the names of *East Indian, Bengal, Java, Manilla, Caraccas, Madras, Guatimala*, and *Kurpah Indigo.* It is found in several plants ; for example, the Woad, *Polygonum tinctorium*, in the greatest proportion in the indigo plants of the East Indies and America, out of which it is extracted by means of fermentation with water (*reduced indigo*). It is precipitated by oxidation in the air from this solution in the form of a dark blue slime, which is carefully dried. It forms flattened often broken pieces of an intensely blue colour and earthy fracture, glistening like copper if scratched with the nail. The more this glistening approaches the colour of gold, the purer the blue is; and the lighter the weight is, the more indigo blue is contained in it. The more inferior sorts contain much indigo red, and have, therefore, a violet hue. They also often contain earthy admixtures, which remain behind on burning the indigo. The price is subject to great variation; at present it is from 50 to 100 groschen per lb.

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† The groschen = 1¼ penny.

Indigo is not used in substance as a pigment; but there are prepared from it—

A. Sulpho-indigotate of potash or *blue carmine* (*Cærulin, soluble indigo blue*). This is prepared by pouring over finely powdered indigo fuming oil of vitriol, which dissolves the indigo without changing its colour. To this solution must be added as much potash as will neutralise at the most half of the sulphuric acid. The precipitated carmine is filtered and dried. It is soluble in water, and chiefly used as a water-colour, seldom as an oil-colour. There are only a few sorts of it. The price is from 8 to 20 dollars per lb.

[A solution of indigo in sulphuric acid is usually denominated *Saxon blue.*]

B. Soluble indigo, called in Germany *Abgezogener Indig.* A similar preparation, in a fluid form, is obtained from the diluted sulphatic indigo solution, by boiling it with flocks of wool or with hair; these attract the colouring matter, and yield it up again to a boiling weak solution of potash; mostly used for dying.

C. Tincture of indigo is the above-mentioned solution of indigo in sulphuric acid in the crude state, or neutralised by potash or soda. It is used for colouring fluids and for blueing linen; whence the names *blue liquor, washing blue, blue water, &c.* The neutralised indigo solution has been recently met with in commerce as a thickish fluid, or having the consistency of a pap, under the name of *fluid carmine* or *extract of indigo.*

D. Starch coloured blue with one of the foregoing solutions, under the name of *new, indigo-new* or *washing blue.*

[The *stone blue* used for washing belongs to this division.]

VII. Lichen Blue, as *litmus* or *turnsole.* Certain species of lichens contain peculiar substances (*erythrin* and *orcin*), which, although colourless in themselves are capable of assuming by putrefaction with animal fluids a beautiful violet colour, and a blue colour if potash be present. If the lichens be finely ground and mixed with urine, potash, and quicklime, and the whole left to putrefy until a beautiful blue paste is formed, and this be mixed with chalk, moulded in cubes, and dried, we obtain *litmus.* Water extracts the colouring matter as a violet blue colour, the earthy parts remaining behind. Acids change it into red, but alkalies do not affect it. It is, therefore, a favourite lime colour, but is also used as a water colour. There are only a few sorts, the prices being from 16 to 25 dollars per cwt.

If the putrefaction be allowed to go on without the addition of potash and quicklime a violet magma is formed, which occurs in trade, either in the form of a pulp, and called *orchil* or *cudbear paste*, or dried as a blackish violet powder under the name of *persio* or *cudbear powder.*

VIII. Blue colouring matters are further contained:

A. In *logwood*, the reddish brown heartwood of the Campeachy tree; and in the extract of the same, which has recently come much in use, either in a dry state, or more frequently of the consistency of syrup. The colouring matter is soluble in water, forming a brownish red solution; and is precipitated of a violet colour by the addition of salt of tin and alkalies; blue by a salt of copper; and black by a salt of iron.

B. In different berries; as bilberries, elderberries, mulberries, nightshade berries, and the berries of the privet. The colouring matters contained in them are analogous to those contained in the logwood.

OBSOLETE BLUE COLOURS.

Formerly blue copper colours, or Prussian blue mixed with oxide of zinc, were sold as *mineral blue.* Oxide of molybdenum and molybdate of the protoxide of tin were sold as *blue carmine.*

Bismuth blue consisted of a compound of bismuth and sulphur.

Iron blue (*blue earth*) consisted of phosphate of the protoxide of iron.

Carbon blue is finely divided carbon.

For dyeing or printing wool, cotton, silk, linen, leather, hair, &c. *blue*;—yellow prussiate of potash and a salt of iron are used (*Berlin blue*) for dyeing them of a *potash*, *Raymond*, or *chemical blue*; red prussiate of potash and a salt of iron for dyeing them *bleu francais*; reduced indigo and woad for dyeing them *Küpen*, *Schilder*, and *Kasten blue*; the sulphatic solution of indigo, or soluble indigo is used for *Saxon*, or *composition blue*; logwood for *wood blue*; and privet and (rarely) nightshade berries for *berry blue.* Wood and ivory are dyed blue with a solution of indigo.

For *paper-staining* are used smalt (only for those papers dyed in the rags), lapis-lazuli blue, cobaltic ultramarine (rarely), mountain blue, Berlin blue, logwood and privet berries. Indigo is scarcely now used.

For staining and painting *sweetmeats*, *dragées*, and *wafers*, may be used lapis-lazuli blue, indigo (blue carmine, new blue), Berlin blue (with the exception of the solution prepared with oxalic acid), litmus, and logwood.

For *liqueurs*, neutralised indigo solution, litmus, wood-blue, and berry-blue with potash. As blue *enamel colours* for glass, china, crockery, &c., oxide of cobalt and its combinations are used, for example, cobaltic ultramarine, smalt, &c.

(*To be continued.*)

ON THE VARIETIES AND CLARIFICATION OF HONEY.

BY OTTO KÖHNKE.

1. *Varieties.*—It is well known that raw honey varies in its properties according to the nature of the vegetation from which the bees have gathered their food; according as the honey is obtained from cultivated or wild bees; according to the method and attention used in separating it from the wax, as well as according to the age of the honey and the manner of preserving it.

The honey of young bees is in general lighter coloured and more agreeable than that of old bees, even when both kinds of bees gather their honey in the same district, except when the honey is gathered from the flowers of the buck-wheat, the common heath, and coniferous plants, in which case the honey of old bees may also be white. But young bees always yield, under like circumstances, whitish honey, whether the same be separated from the wax without heat, or at a temperature of from 88°.25 F. to 99° F., and by pressure. It is also well known that honey becomes brown or impure if too great heat and too strong pressure be applied. Brown honey has a less specific weight, and does not become so quickly granular as white honey.

Bright yellow honey of young bees, whose food consisted chiefly of buck-wheat blossoms, solidified, after three or four weeks, into a crumbly unctuous mass, and had a specific weight of from 1.425 to 1.429. *Honey of old bees* from the same place concreted only after four and six weeks and formed a crumbly unctuous mass, having a specific gravity of from 1.415 to 1.422.

Honey of a heath country (heath-honey) was of a pale yellow colour, harder than the before-mentioned, and had a specific weight of 1.425 to 1.434. From old bees of the same heath-country the honey was light brown, and had a specific weight of 1.422 to 1.430.

Honey of a marshy country (marsh-honey), where the bees had gathered their food chiefly from the flowers of the Brassica, Vicia Faba, and Trifolium, was almost white, hardened after six or eight days into a mass which could be compared to melted ox-tallow, and had a specific weight of from 1.435 to 1.440, and was consequently the heaviest of the whole and possessed the best qualities. Marsh honey, therefore, is in much request.

2. *Preservation.* — The preservation of honey is best effected in small wooden tubs with well closed lids, so that such a vessel when once opened may be emptied in three or four months. The honey after having run, and been pressed out of the comb at a temperature of from 88°.25 F. to 90° F. should be immediately poured into these vessels, which should be put in a dry cool spot. When the honey has concreted it should be covered with waxed paper, and the vessels closed with well fitted lids. Earthen pots are sometimes burst by the solidification of the honey, and they are, therefore, less suitable for the preservation of honey than small wooden casks. In damp air the honey gradually undergoes a partial decomposition: liquefying and becoming sour. If the acid of such old honey be saturated with milk of lime, some ammonia is evolved and lactate of lime formed. That the honey ferments, if it be watery, is well known. If the same after being diluted with water be saturated with lime a flocculent sediment is formed, which possesses the qualities of a ferment containing caseine.

It has been hitherto believed that all honey contains some free acid; but Köhnke tested recently separated and almost colourless marsh-honey, from more than fifty hives, with litmus paper, and could not discover any acid reaction. But upon testing honey from bees which had been killed by brimstone, an acid reaction took place.

3. *Clarification.*—As regards the purification of honey for medicinal use, there has been already so much written and proposed on it, that one would scarcely believe that anything new could be added; nevertheless we think that the following deserves notice. Köhnke prefers the method of purification by means of charcoal (*kohle*) to all other methods. In order, therefore, to prepare *Mel depuratum*, he takes ten parts by weight of solid honey, five parts by weight of water, and one part of animal charcoal (bone black), in pieces of the size of peas, and carefully separated from the fine powder. The whole is heated in a covered tinned copper kettle over a slow charcoal fire, at a temperature of 144°.5 F. to 167° F.

This heat is to be kept up for from twenty-four to thirty-six hours; frequently stirring the mixture. At last the heat is to be increased until the honey begins to boil, which must be only allowed to continue for one or two minutes. He then pours the whole into an earthen vessel, and lets it stand for six or eight days.

Should too much water have evaporated, and the specific weight be found heavier than 1.300, sufficient water must be immediately added after the ebullition. If the specific weight be lower than this, the raw honey must have been watery and light. In that case proportionately less water should be employed from the beginning.

In six or eight days the charcoal has settled to the bottom of the vessel, so that the now almost clear honey only requires to be poured upon a thick single or double woollen cloth, taking care not to disturb the sediment. From forty to fifty pounds of pure clear strained honey of 1.300 specific weight are obtained in a few hours. If brown honey was used, it appears after purification of a wine-yellow colour. White honey requires only half of the above-mentioned quantity of charcoal, consequently for twenty pounds of honey only one pound of charcoal is required, and the *Mel depuratum* thereby obtained is nearly colourless.

By this process the honey undergoes no decomposition. It is well-known, however, that honey boiled, according to the old method, diluted with water, for a longer period in an open vessel, loses its balsamic fragrance, and in general undergoes a remarkable change. But the honey purified by Köhnke's method is deprived of all opaque and waxy particles, has a specific weight of 1.300, and retains its natural fragrance, although in a weaker degree, together with the agreeable taste of the raw honey. If one or two drachms of it be diluted with from four to six ounces of water, no flocculi are deposited. An especial proof of its strength and purity consists in its becoming again granular after it has been for some time exposed to a temperature of from 54° to 58°.5 Fah. The residual charcoal and the filter or strainer should be washed with hot water in order to extract the residual honey, which may be employed for technical or economical purposes. The loss of honey, however, is scarcely worth consideration.—*Buchner's Repertorium.*

IMPROVEMENT IN THE PATENT PNEUMATIC ENEMA.*

Messrs. Philp and Whicker have lately introduced a great improvement in this instrument at the suggestion of Mr. James Horne (the original Patentee). The instrument as before constructed was filled at the top, the upper portion in which the pump is fixed, being removeable by means of a screw for the purpose of introducing the fluid. Any slight defect in the screw, or inadvertence in replacing it after filling the vessel, was found to allow the admission of air to a certain extent, and thus to interfere with the successful action of the instrument. The upper part is now made solid, and therefore absolutely air-tight: the bottom being removed by unscrewing to fill the vessel. This screw is so constructed as not to be liable to leakage, or if this should occur from carelessness in replacing it, the fact would be observed immediately by the escape of a portion of the fluid. The tube is also improved, being extensible on the telescope plan instead of by the insertion of an extra length of tube. The instrument is now unexceptionable, and we are informed that the price will be reduced. This is judicious, as the high price originally charged would be an obstacle to its general use, however perfect might be its construction.

ON THE RESIN OF THE XANTHORŒA HASTILIS,

Or Yellow Gum Resin of New Holland.

BY JOHN STENHOUSE, ESQ., PH.D.†

This remarkable resin, which is known in commerce as the yellow gum or acaroid resin of Botany Bay, exudes from the *Xanthoræa hastilis*, a tree which grows abundantly in New Holland, especially in the neighbourhood of Sidney. This resin was first described in Governor Phillips's Voyage to New South Wales in 1788. Mr. Phillips states that it was first employed by the natives and first settlers as a medicine in cases of diarrhœa. The resin as it occurs in commerce sometimes forms masses of considerable size, but as it is very brittle, although tolerably hard, it usually arrives in the state of a coarse powder. Its colour is a deep yellow, with a slightly reddish shade, considerably resembling gamboge, but darker and less pleasing. The colour of its powder is greenish yellow. When chewed it does not dissolve or stick to the teeth, but tastes slightly astringent and aromatic like storax or benzoin. Its smell is very agreeable and balsamic. When gently heated it melts, and when strongly heated it burns with a strong smoky flame, and emits a fragrant odour resembling balsam of tolu. The resin contains a trace of an essential oil, to which much of its agreeable smell is probably owing. This oil passes into the receiver when the resin is distilled with a mixture of carbonate of soda and water, but its quantity is so small that I was unable to examine it more closely. The resin is insoluble in water, but dissolves readily both in alcohol and in æther, especially in the former. Its solution in alcohol has a brownish yellow colour ; the addition of water precipitates it as a dark yellow mass, but it does not crystallize out of its alcoholic solution when left to spontaneous evaporation, but remains as a varnish. When digested with strong alkaline lyes, it readily dissolves and forms a brownish red solution ; and when the alkali is neutralized with muriatic acid, the resin is precipitated considerably altered as a dark brownish brittle mass. On concentrating the solution out of which the resin has been precipitated, and allowing it to cool, a quantity of impure reddish crystals resembling benzoic acid are gradually deposited. It requires repeated and long-continued digestions with the strongest alkaline lyes to remove the whole of this crystalline acid from the resin, which retains it with very great tenacity. The quantity of the acid is by no means great. It is not easily purified, as its crystals are apt to retain a trace of a reddish colouring matter, from which it is very difficult to free them. The easiest way of getting rid of it, is by dissolving the impure crystals in a small quantity of alcohol and then adding water ; the greater portion of the colouring matter is retained in solution, while the crystals are precipitated tolerably white. When purified by repeated crystallizations, they become quite colourless. In appearance, taste, and smell they closely resemble benzoic acid. When dried at 212° Fahr. and subjected to analysis—

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* Described and figured, vol. v., page 189.

† Communicated by the Chemical Society; read November 17, 1845.

I. 0.2284 grm. of substance gave 0.6005 CO_2 and 0.113 HO.

II. 0.2955 grm. of substance prepared on a different occasion gave 0.790 CO_2 and 0.1505 HO.

	Found.		Cinnamic Acid.	Benzoic Acid.
	I.	II.		
Carbon	71.74	72.91	73.35	68.85
Hydrogen......... ..	5.49	5.65	5.32	4.91
Oxygen...............	22.77	21.44	21.33	26.24
	100.00	100.00	100.00	100.00

It is evident from these analyses that the crystalline acid contains nearly the same amount of carbon and hydrogen as cinnamic acid, with some deficiency however in the carbon. I was led therefore to suspect that it consisted essentially of cinnamic acid, with probably a small admixture of benzoic acid, a suspicion which subsequent experiments tended fully to confirm ; for on heating a quantity of the crystals with some peroxide of manganese and sulphuric acid, oil of bitter almonds was immediately evolved, and on boiling a second portion with hypochlorite of lime, the very peculiar chlorinated oil described in a former paper was also abundantly produced, thus clearly indicating the presence of cinnamic acid. A third portion of the crystals was dissolved in alcohol and left to spontaneous evaporation ; it yielded after some time the fine rhombic prisms so characteristic of cinnamic acid when it is crystallized out of alcohol, mixed however with some long acicular crystals, having all the appearance of benzoic acid. I think myself warranted to conclude therefore that Botany Bay resin contains cinnamic acid mixed with a very little benzoic, in which respect it resembles balsam of tolu, which contains both cinnamic and benzoic acids, though fortunately in much greater abundance.

ACTION OF NITRIC ACID ON THE RESIN.

When the resin is treated with moderately strong nitric acid in the cold, a violent action ensues with the evolution of nitrous fumes. The resin is completely dissolved if the quantity of the nitric acid is considerable. The colour of the solution is dark red, but by boiling it becomes of a bright yellow colour. The liquid should be evaporated to dryness on the water-bath, to get rid of the great excess of nitric acid. The residue forms a mass of fine yellow crystals, consisting chiefly of carbazotic acid, but mixed with some oxalic and a little nitrobenzoic acids. The nitrobenzoic acid is evidently derived from the cinnamic acid in the resin. The carbazotic acid is easily separated from these other acids by converting it into carbazotate of potash, which is easily purified by one or two crystallizations, and then by decomposing the salt with muriatic acid, pure carbazotic acid may be obtained.

0.3823 grm. of the acid, dried at 212° F., gave 0.442 CO_2 and 0.049 HO.

	Found.	Calculated numbers.
Carbon	31.53	31.37
Hydrogen	1.42	1.30
Oxygen	67.05	67.33
	100.00	100.00

0.3975 grm. of the potash salt, decomposed by sulphuric acid and then ignited with carbonate of ammonia, left 0.1300 of sulphate of potash=17.68 per cent. of potash ;, calculated quantity 17.60.

The silver salt was also formed by boiling the acid with carbonate of silver. It is a very soluble salt, which crystallizes in fine red-coloured needles. 0.8975 grm. of the salt gave 0.372 Cl Ag=31.22 Ag, or 33.53 per cent. oxide. The calculated numbers are 31.27 per cent. of silver=33.52 oxide.

The quantity of carbazotic acid which Botany Bay resin yields when treated with nitric acid is so great, and it is so easily purified, that this resin seems likely to prove the best source of that substance. When the resin is subjected to destructive distillation in an iron or copper retort, it yields a very large quantity of a heavy acid oil mixed with a very small quantity of a neutral oil, which is lighter than water. If however the resin has been previously digested with alkaline lyes, so as to remove all the cinnamic and benzoic acids it contains, the heavy oil is obtained as before, but none of the light essential oil. The acid oil is readily soluble in potash and soda lyes ; in its smell and properties it resembles creosote ; when it is digested with nitric acid, it is wholly converted into carbazotic acid, and when a slip of fir-wood is dipt in it, and then moistened with either muriatic or nitric acid, the deep blue colour passing quickly into brown, so characteristic of hydrate of phenyle, is immediately produced, with which substance the oil appears completely identical. The light oil above mentioned, the quantity of which is extremely small, is separated from the hydrate of phenyle by saturating it with an alkali and distilling the mixture in a glass retort with a gentle heat. In smell and properties it resembles benzine, and is most probably a mixture of benzine and cinnamene ; unfortunately the quantity obtained was so small, that I was unable to subject it to more particular examination.—*Phil. Mag.*, June 1846.

ON THE PREPARATION OF HYPOSULPHITE OF SODA.

BY E. F. ANTHON.

If dry sulphurous acid be conducted over powdered sulphuret of sodium (in a dry state) no action is observed ; but if the sulphuret has previously been moistened with about 20 per cent. of water, the sulphurous acid is then very quickly absorbed, provided the sulphuret contain an excess of carbon (*kohle*), and was exposed only to such a temperature that it could not melt, and but only slightly concrete. During the absorption of the sulphurous acid a strong developement of heat takes place ; and the pulverulent sulphuret of sodium becomes moist. These phenomena can be easily noticed if the sulphuret be placed in a glass tube, and the sulphurous acid be allowed to enter from beneath. At this stage no odour can be perceived at the upper opening of the tube, but as soon as the heating and moistening of the sulphuret have arrived at the upper end of the tube, sulphuretted hydrogen gas begins to be developed, and sulphur to sublime on the sides of the tube. If the experiment be now interrupted, hyposulphite of soda, containing carbon and some sulphuret of sodium, is found in the tube. This forms with water a pale yellow-coloured solution; but if the sulphurous acid be allowed to pass as long as the sulphuretted hydrogen is detected, and until nothing but the excess of sulphurous acid is perceived, the product gives, when mixed with water, a colourless solution, which is free from sulphuret of sodium, and, therefore, quickly changes, on the admission of air, into sulphite and sulphate of soda.

The sulphuret of sodium gains about 70 per cent. in weight (the water included). The whole experiment lasts, when small quantities of sulphuret are used, scarcely a quarter of an hour, and from the carbonaceous crude mass, crystallized hyposulphite of soda can be easily obtained.

The facility with which solid hydrous sulphuret of sodium (hydrosulphuret of soda) is converted, by means of sulphurous acid, into hyposulphite of soda, affords, therefore, a simple and cheap means of procuring this salt, which has latterly acquired some importance for Daguerrotyping and in the manufacture of paper.

With regard to this process, it is particularly to be observed, that the transmission of the sulphurous acid into the powdered sulphuret of sodium must be stopped before the developement of sulphuretted hydrogen gas has ceased, in order to obtain hyposulphite of soda, containing some sulphuret of sodium, and consequently permanent in the air.—*Buchner's Repertorium*, Bd. xlii., p. 20.

THE ADVANTAGES OF EDUCATION TO ASSOCIATES.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

SIR,—In reply to T. S. C.'s letter in your Journal for July, complaining of the remarks I made at the Annual Meeting of the Society, I beg to say my charge of apathy against young men was founded upon the fact that, as far as my observation extended, four out of six had not joined the Association, which clearly proves their indifference to it. Your correspondent says this arises from the conviction that no benefit can accrue to them from becoming members. This, I think, is not correct, as they become entitled to the Journal, which all admit (who read it) contains a large amount of valuable information; much of which could not be obtained from any other source. They also have access to the Museum, and thereby may become acquainted with many scarce chemicals and specimens of plants, roots, &c., which would not be seen by Pharmaceutists generally, under other circumstances. Moreover, they may, upon engaging as Assistants, stipulate for two or three hours in the week to attend a course of lectures; and sure I am, if employers found these Associates more competent and more attentive than others, they would cheerfully fall into the arrangement, although it might put them to some inconvenience. These remarks I am aware apply only to Associates in London, but I hope the day is not far distant when young men will so arrange matters (if practicable) as to visit the metropolis after completing their apprenticeship *to attend the lectures;* making salary for the first year or so a secondary consideration. When my Assistant is an Associate I allow him to attend a course of Lectures, provided I find him appreciate the privilege and act accordingly; and I am happy to say my interests have not suffered by the arrangement, but on the contrary, my best Assistants have been those who were connected with the Society, and felt an interest in its movements.

51, *Judd Street, London,*
17*th July*, 1846.

I am, Sir, your obedient Servant,
BENJ. HUMPAGE.

NOTICES OF BOOKS RECEIVED.

THE SURGICAL, MECHANICAL, AND MEDICAL TREATMENT OF THE TEETH, *including Dental Mechanics. Illustrated with* 139 *Engravings. By* JAMES ROBINSON, *Surgeon-Dentist to the Metropolitan Hospital, Lecturer on the Anatomy, Physiology, and Pathology of the Teeth, Honorary Doctor of Dental Surgery of the Baltimore College of Dental Surgeons, &c.* London: W. Webster, 60, Piccadilly; Lindsay and Blakiston, Philadelphia, U.S. 8vo, pp. 320.

WITHOUT pretending to possess a knowledge of Dental Surgery, which is out of our province, we find in the above work the evidence of labour and a minute classification of every branch of the subject. The table of contents occupies fifteen pages, in which the reader will find a convenient reference to every topic treated of; comprising historical, anatomical, physiological, chemical, medical, surgical, and mechanical information. The work is copiously illustrated with plates.

THE HALF-YEARLY ABSTRACT OF THE MEDICAL SCIENCES, *being a Practical and Analytical Digest of the Contents of the principal British and Continental Medical Works published in the preceding six months; together with a Series of Critical Reports on the Progress of Medicine and the Collateral Sciences during the same period. Edited by* W. H. RANKING, M.D., Cantab., *Physician to Suffolk General Hospital.* Vol. III., January-June 1846. London: John Churchill, Princes Street, Soho; Edinburgh: Maclagan and Co.; Dublin: Fannin and Co. 8vo, pp. 409.

THIS work will be found very useful and valuable, especially to those who have not the opportunity of seeing the various periodicals as they come out, and who nevertheless desire to make themselves acquainted with the discoveries and improvements connected with the Medical Profession.

A HISTORY OF INVENTIONS, DISCOVERIES, AND ORIGINS. *By* JOHN BECKMANN, *Professor of Economy in the University of Göttingen; translated from the German by* WILLIAM JOHNSON. *Fourth edition, carefully revised and enlarged by* WILLIAM FRANCES, Ph.D., F.L.S., *editor of the "Chemical Gazette;" and* J. W. GRIFFITH, M.D., F.L.S., *Licentiate of the Royal College of Physicians.* Vol. I. London: Henry G. Bohn, York Street, Covent Garden. 8vo, pp. 518.

A VERY interesting work, containing curious and useful information on a great variety of subjects relating to medicine, Chemistry, mechanics, and discoveries in general.

REPORTS *to Her Majesty's Government, in respect to* FEEDING OF CATTLE WITH MALT.

(Parliamentary Papers.)

WE have received a copy of these Reports from the Chairman of the Board of Excise. It appears that applications were made to the Government to allow malted barley to be used, free of duty, for feeding cattle, on the ground that the barley was more fattening in this state than previously to its being malted. The following questions were in consequence submitted by the Chairman of the Board of Excise to Dr. Thomson, Professor of Chemistry in the University of Glasgow; Mr. Graham, Professor of Chemistry in University College, London; and Dr. Lyon Playfair:

> "*Can you give any opinion whether the value of barley or other grain for the fattening of cattle is increased by being malted, and to what extent? We do not object to the steeping of grain. Do you suppose there is any advantage in this process?*"

The answers given by Dr. Playfair and Professor Graham very closely coincide. Professor Graham states, that he can find no evidence of cattle having been exclusively fed on malt, even on the continent where it is not subjected to Excise duty. He says,—

> "In the process of malting barley a loss of nutritive substance takes place, which is estimated by Professor Liebig at from five to seven *per cent.* The starch of the grain is saccharized and rendered soluble, which is also the first step in the digestion of unmalted grain. Although less nutritive, malt may therefore be more digestible by cattle than the original unmalted grain, even when the latter is softened by grinding and mashing in hot-water.
>
> "It is well known that the infusion of malt, or sweet worts, acts as an aperient both on man and cattle, and cannot be used largely as nutriment. Malt acts in the same way upon cattle, and this has been found practically to keep within narrow limits the proportion which it may be allowed to form of their food. But, in a small proportion, it has been pretty generally observed to be beneficial to both horses and black cattle, in certain conditions of health; still, it is to be observed, rather as a condiment than as the staple of their food.
>
> "Coarse sugar or molasses might, I believe, be substituted for malt with the same beneficial effects."

Dr. Thomson, in connexion with his nephew Dr. R. D. Thomson, instituted a lengthened series of experiments with the view of obtaining direct evidence on the points in question; and the reports founded on these experiments, constitute the greater part of the work before us.

In conducting the investigation, two cows were selected of nearly equal size, which were housed and kept on fixed diet for stated periods, while at the same time the milk, butter, and excrements were daily estimated, and the cows were weighed from time to time, to mark any alteration in the condition of the animals. The cows were first fed on cut grass, and this diet was continued for a fortnight, about 100 lbs. being given to each cow *per diem*. The diet was then changed, a portion of barley being substituted for part of the grass. This was continued for eleven days. Malt was then substituted for barley, for a period of ten days. Then a diet of hay and barley, and of hay, barley, and molasses, was continued for some time, and afterwards hay, malt, &c. The following were the results obtained from one of the cows, being the daily average:—

Experiment.	Diet in lbs.	Milk yielded in lbs.	Dung yielded in lbs.
1.	Grass ...101.91	21.8=2.7 dry	71.4= 8.8 dry
2.	Grass ... 85.4 Barley ... 4.3	20.1=2.6 dry	80.6= 9.4 dry
3.	Grass ... 85. Malt...... 5.6	20.4=2.6 dry	84.2=11.7 dry
4.	Grass ... 26.6 Hay ...... 21.2 Barley ... 9.	22.0=2.8 dry	84.2=10.9 dry
5.	Hay ...... 27.6 Barley ... 9.	23.1=2.9 dry	78.5=10.9 dry
6.	Hay ...... 27.0 Barley ... 9. Molasses 3.	22.7=2.9 dry	87.7=11.8 dry
7.	Hay ...... 29.3 Malt...... 10.7	21.5=2.7 dry	78.7=10.6 dry
8.	Hay ...... 27.1 Barley ... 11.2	20.0=2.5 dry	75.6=10.4 dry
9.	Hay ...... 21.6 Barley ... 9. Linseed... 3.	20.2=2.5 dry	82.7=10.7 dry
10.	Hay ...... 25.4 Barley ... 6.5 Linseed... 5.5	20.8=2.6 dry	72.2= 9.3 dry
11.	Hay ...... 24.3 Bean Meal 12.	19.5=2.5 dry	74.2= 9.6 dry

The authors of the report state:—

> "These experiments leave no doubt that barley is more nourishing to cows than malt; at least, as far as the production of milk and butter is concerned. They confirm the conclusions which we drew from the chemical analysis of both. Barley, when malted, loses almost one-fifth of its weight. The proportion of azote (which is necessary both for the support of the animal and for the production of milk) is considerably less in malt than in barley."

The experiments, the details of which are described in the reports with great minuteness, have evidently been conducted with much ability; but we think it will be admitted, that no very conclusive inference can be drawn with reference to the main question at issue, until similar observations have been made on a more extended scale.

FREE TRADE IN MEDICINES.

A correspondent informs us, that in his town there are five persons (including himself) who sell drugs. Three of these are females, and one is a young man who manages a greengrocer's shop, but who was brought up as a saddler. One of the three females keeps an ironmonger's and grocer's shop; another is the wife of a blacksmith, who is also an ironmonger and grocer; the third is the wife of a currier who keeps a grocer's shop. The first of these ladies is a widow; the others likewise have the entire management of the Pharmaceutical and Medical department in their respective establishments. Our correspondent established himself about three years ago, prior to which time there was no regular Druggist in the town.

Another correspondent informs us, that in the town in which he resides there are six retailers of drugs, five of whom have served no apprenticeship to the business or received any education whatever in Pharmacy.

R. A. F. has sent us a communication on this subject. Although we differ from him in opinion, we should have published the letter if it had been expressed in becoming language; but we have too much respect for the author to publish a communication which we think he would be ashamed of if he were to see it in print.

"Libra" makes the following remarks on this subject, in a letter which we received a short time ago, and which we should have published entire if the author had given his name.

"We deal in articles of the greatest importance to the welfare of the community, of the genuineness of which, and of our faithfulness in supplying them, the public cannot be judges. When a person goes to buy a pair of shoes, a pound of sugar, or any other article of general request, he is, or thinks he is, a sufficient judge of its quality to prevent his being deceived, and there is no necessity for the interference of the legislature; the prudence and attention which every man ought to possess, will enable him to take care of himself. But when he goes with a prescription to a Chemist he has no means of doing so—he is no judge of the correctness of the compound, or the genuineness of the ingredients; he is wholly at the mercy of the person to whom he applies, and his health, and perhaps his life, is entrusted to another. There appears, therefore, to be ample reason that the legislature should interpose as the guardian of the national weal, and do all that can be done to protect the public from danger. It appears to be the unquestionable duty of the government to see, that if the health and lives of its people, at times when they cannot take care of themselves, are entrusted to any body of men, that body of men should show that they are worthy of such trust. And that, if the title of Chemist and Druggist is that by which such qualified persons are to be distinguished, it shall not be assumed by any but those who can prove their qualification. The legislature has then done its duty, and if the public choose to place their health or lives in the hands of those whom they have no such reason to regard as worthy to be trusted, they do it at their own risk, and if mischief ensues, they have but themselves to blame."

TO CORRESPONDENTS.

"A Druggist."—Calumbo root contains no tannic or gallic acid, consequently, the tincture is not discoloured by the addition of salts of iron. Dr. Pereira mentions a false calumbo, which "becomes blackish green by the addition of sulphate of iron, and yields a precipitate with solution of gelatine, indicating the presence of tannic acid."—*Elements of Materia Medica*, 2d Edition, page 1786.

A. B.—Professor Marchand's work (mentioned vol. v. page 526) is entitled *Lehrbuch der Physiologischen Chemie*. It was published in Berlin by M. Simon, 1834.

"An Associate."—Spinach is we believe usually employed to give a green colour to essence of peppermint. All vegetable greens are more or less liable to fade. A mineral green would be inadmissible. We see no advantage in giving a green colour to essence of peppermint.

"Virgilius."—(1.) White leather is prepared with lime, alum, &c. which ingredients, by the treatment described, are dissolved out.—(2.) The process of displacement answers very well for many tinctures, but it requires careful manipulation. See vol. i., pages 61, 591, 654.—(3.) Terchloride of carbon. See vol. v., page 412.—(4.) It should be kept in well-corked bottles.

"Clio."—(1.) See vol. i., page 264.—(2.) Try Butler's Vermin-killer (advertised on the cover for May).

A., A. P. S.—See the above.

"Incognitus" (1.) inquires "what kind of the following articles is to be understood, as they are put in many places, in the Pharmacopœia, simply, *soap*, *liquorice*, *senna*, *chalk*, *ginger*, *water*, *aloes*, &c.? [Our correspondent, evidently, has not studied his Pharmacopœia. That work consists, *first*, of a description of the *weights*, *measures*, &c., intended to be used in the preparation of the different compounds ordered in other parts of the work, and the symbols by which these weights and measures are indicated; *secondly*, of a description of the *Materia Medica*, or the substances to be used in the different compounds; *thirdly*, of *notes* describing the methods by which the strength, purity, and composition, of many of the chemical preparations may be ascertained; and *fourthly*, of the formulæ for the *preparations and compounds*. The articles mentioned by our correspondent are all described in the second part, under the head *Materia Medica*, as also is *borax*, *liquor ammoniæ*, and *liquor ammoniæ fortior*.—(2.) Distilled water should always be used when "aqua," or "aqua pura," is ordered in prescriptions.—(3.) Bichloride of mercury does not exist in a free state in the *ammonio-chloride of mercury* of the Pharmacopœia, the constituents are in a state of chemical combination.

"An Associate."—We know of no good account of the preparation of *artificial mineral waters* in English.

"Timidus."—An unsuccessful candidate may present himself again for examination in six months. There is no limit to the number of times provided the interval of six months be observed.

H. B. C.—Dr. Stolberg has not published his formula for voice lozenges, and we are not in possession of his secret.

A. B.—Old varnish is usually removed from pictures by rubbing with the finger. The varnish crumbles into powder, and by careful manipulation may be almost entirely removed without injury to the picture. The application of a little spirit of wine completes the process; this must be done quickly and with great care.

"An Associate," (Manchester).—Glass vessels when not properly annealed are liable to fly into pieces. The process of annealing consists in cooling very gradually. See any Treatise on the Manufacture of Glass.

Z. Z. (Hastings).—Farmers who buy sulphate of copper adulterated with 30 or 40 per cent. of sulphate of iron, are "penny wise and pound foolish." Several correspondents have informed us that this impure compound fails to produce the desired effect. It is more economical to give a fair price for the article required, than to buy it mixed with what is worse than useless.

J. F. G.—We are not acquainted with the formulas for "Indian lemonade" and "orange sherbet."

"An Enquirer."—We cannot conceive it possible that the Editor of the Lancet has any interest in the patent for "Amorphous Quinine."

Advertisements to Mr. Churchill, Princes Street, Soho.

Other Communications to The Editor, 338, Oxford Street, before the 20th of the month.

THE PHARMACEUTICAL JOURNAL.

VOL. VI.—No. III.—SEPTEMBER 1st, 1846.

MEDICAL REFORM.

A Bill *for the Registration of the legally qualified Practitioners of Medicine in Great Britain and Ireland.*

(Prepared and brought in by Mr. Wakley and Mr. Warburton).

It might be supposed from the title of this Bill that it was merely a preliminary measure, or a matter of statistical detail, involving no clashing of interests, or other circumstances likely to give rise to much discussion. Mr. Wakley (*Lancet*, August 22) states that it is a "*first step* in Medical legislation," and that it "probably embraces the plan which of all others is the best calculated to ensure the ultimate establishment of an efficient system of representative government for the Medical Profession of the United Kingdom."

The Bill provides for the appointment of three fit and proper persons as Registrars, one for each of the three kingdoms, together with clerks and other officers. The said Registrars are, within a month of the passing of the Act, to commence registering, without fee, every Physician, Surgeon, and Apothecary, who shall apply to be registered, producing evidence satisfactory to them of having obtained a diploma, certificate, or licence, dated *prior to the passing of the Act*, from some College or Hall in England, Scótland, or Ireland, legally qualified to grant degrees. Persons in practice before 1815, are to be registered, without fee, on producing satisfactory evidence to that effect. Those who obtain their diplomas, &c. *after the passing of the Act*, are to pay £2 on registration.

The Registrars are to grant Certificates (according to a form in schedule) to persons who apply for them, having been previously registered:—the fee for such Certificates being 5*s.* for the first year—7*s.* a year afterwards. A register of these Certificates is to be kept, and an alphabetical list of the names published *annually* in a book, which shall be sold at a price not exceeding 1*s.*

Persons omitted accidentally in the original register, or changing their abode, may be registered on payment of 20*s.*

Persons not possessing *Certificates* are to be excluded from the rank of legally qualified Medical Practitioners, being prohibited from acting as such in public institutions; and only those who possess the Certificate, are to be entitled to exemption from serving on juries, inquests, the militia, and parochial offices.

The penalty for acting in any public situation as a Medical

Practitioner, without Certificate, is *twenty pounds*, recoverable by action of debt or information in the usual courts of law.

Interpretation clause.—" The words ' medicine' and ' medical' where used in this Act, shall also mean and include the words ' surgery' and ' surgical.' "

Every person possessing a Certificate under this Act would enjoy the rank of a " Member of the Faculty of Medicine," with all the privileges, immunities, and emoluments of a legally qualified Medical Practitioner. A person neglecting to obtain the Certificate, would be deprived of all these advantages, and however high might be his qualification, he would be liable to a penalty of twenty pounds for acting in any medical capacity in which medical services are required by law.

Consequently, the three Registrars would control the whole profession, being empowered to decide on the merits of each candidate on his application to be registered, and to grant Certificates, the possession of which would be more important *as a qualification to practise*, than a diploma from the most renowned university, which, without the Certificate, would be worth nothing. The Certificates recognize no distinction of rank, simply stating that the possessor is a Member of the Faculty of Medicine.

We are informed in the *Lancet* of August 22, that the Presidents of the Colleges of Physicians and Surgeons, and the Master and Wardens of the Society of Apothecaries, are against the Bill; and think a modification might probably be made which would remove this objection.

Instead of appointing three Registrars for the three kingdoms respectively, let three be appointed in each kingdom; one by the College of Physicians, one by the College of Surgeons, one by the Society of Apothecaries, or General Practitioners. Let the three Registrars in each kingdom constitute a Board, and publish annually in one volume the three separate lists which each has severally prepared as directed in the Bill; the only difference being, that the annual medical directory of each kingdom would contain a distinct alphabetical list of each class of Practitioners, instead of a mixed alphabetical list of all persons qualified to practise. The distinction between the Surgeon and the Apothecary or General Practitioner would be, that the former does not practise Pharmacy.

The form of Certificate in schedule *B*, should be made to correspond with the description of the qualification in the register.

With the above alterations, we think no reasonable objections could be urged against the Bill, which appears to be simple, practicable, and likely to effect the object contemplated.

In the House of Commons on Friday, the 21st inst., Sir G. Grey, asked the hon. member for Finsbury what course he intended to take with respect to this Bill, which stood for committal. It had been read a second time, with the understanding that sufficient time should be allowed for an expression of opinion upon it. Many representations had reached him on the measure, several favourable to it, but some, also, against it. He thought the principle of the Bill a good one, and if the hon. member would consent to let it stand over till next session, every assistance should be given in removing objections to it. It was hardly possible now to ensure it a fair consideration.

Mr. Wakley expressed his satisfaction with the declaration of the right hon. gentleman. He could take no course but that of postponing the Bill, pledging himself to introduce it again next session.

The Bill was withdrawn.

THE SPIRIT LICENCES AND DUTIES BILL.

It would be difficult to imagine a more perplexing dilemma than that in which our body has been placed during the past month. We mentioned in our last number a rumour which had just reached us, that an Act of Parliament was in contemplation, by which it was proposed to place under the Excise all persons using stills. We had no definite idea of the nature of the Bill (which was only ordered to be printed on the 27th of July), nor did we know that it had assumed a tangible form until Friday, the 31st; and on the following day it was ascertained, that the Bill was to be read a third time on Monday, the 3rd instant.

This sudden appearance of a complicated and intricate Bill, seriously affecting the interests of many thousand persons, together with the information that it had already passed through those stages in which opposition or remonstrance was likely to be of any avail, created much alarm and consternation. In order to give some idea of the sensation it produced, and to explain to our readers the kind of law which the Board of Excise considers necessary as a protection to the revenue, we subjoin a brief analysis of the Bill in the state in which it passed two readings, and received the sanction of the Committee of the House of Commons, before any Members of our body, except a few wholesale Druggists, were aware of its existence.

Clauses 1 and 2 provide that every person keeping or using a still or retort, and every wholesale dealer in spirit mixtures, shall take out a licence, paying two guineas annually. The penalty for using a still or retort, or selling above a quart of spirit mixtures without a licence, being £50.

Clause 3 places the management of the Act under the Commissioners of Excise.

Clause 4 provides that all unregistered stills and worms are to be forfeited, but that the Commissioners of Excise may permit " the using of any still or stills for Experiments in Chemistry, or for articles other than spirits or spirit mixtures, under such regulations as they may think fit."

Clause 5, persons licensed under existing laws as distillers, rectifiers, &c., cannot be licensed under this Act.

Clause 6, every person licensed under this Act, shall make a true and particular entry in writing of every building, room, or place used for keeping spirit of wine, or for keeping or making spirit mixtures, or materials for manufacturing the same, and of any still or retort, vessel or utensil, used for manufacturing or keeping the same, each of which articles is to be distinguished by a particular letter or number, corresponding with a letter or number in the said entry: all of which buildings, articles, &c., are to be at all times open to the inspection of the officers of Excise.

Clause 7. All spirits are to be kept in a separate room and place distinct from spirit mixtures, and all spirits found in any other place are to be forfeited.

Clause 8 prohibits the reception or reduction of any spirits below 43 per cent. above proof. The fine for receiving any spirits without a permit, for reducing them below the above standard, or receiving any spirit of less strength, is £100.

Clause 9 permits the sale of spirit of wine in quantities exceeding one gallon by permit, or less than one gallon without permit; an account being kept of the quantity sold by permit or otherwise, with a penalty of £100 for selling spirit of less strength than 43 per cent. over-proof, or for consumption on the premises.

Clause 10 empowers any officer of Excise to take an account of the quantity of spirits in the stock, and to examine the entries of spirit sold or used for making spirit mixtures, inflicting a penalty of £1 per gallon on any excess or deficiency on either side of the account, 5 per cent. being allowed for accidents.

Clause 11 obliges every person licensed under the Act, daily, and every day, or when required by the officer, to enter in "daily entry books," an exact account of the date, quantity, and strength of spirits received, the quantity sent out by permit or otherwise, the quantity and strength of the spirit used in the manufacture of spirit mixtures, with the quantity and sp. gravity or strength of each particular spirit mixture, and the total quantity of each spirit mixture sold in quantities of one gallon or more by permit, or in less quantities without permit. This account to be verified at the Excise office once in six weeks — the penalty for any deviation from this regulation being £100.

Clause 12 states that a separate stock is to be kept of all and each of the spirit mixtures, which are to be arranged as directed by the officer of Excise for his convenience, assistance being given him whenever required, in weighing, measuring, and taking the specific gravity of the same. Penalty for disobedience, £100.

Clause 13, gives an imaginary scale of specific gravities to be adopted in all cases of doubt.

Clause 14. The officer of Excise is to keep a Debtor and Creditor account of the separate stocks of spirit mixtures, with their respective strength or specific gravity; and in the event of any discrepancy between such account and the stock on hand, the amount in excess or deficiency is to be forfeited, with a fine of £1 per gallon.

Clause 15. Spirit mixtures in the quantity of one gallon or more, not to be moved without a permit, to be obtained in the usual way from the Excise office.

Clause 16. Officers of Excise may estimate the quantity of stock either by weight or by measure.

Clause 17. Any person receiving spirit mixtures made from spirit which has not paid the duty, or purchasing at a price below the market price of the spirit contained in them (if duty paid) to forfeit such mixtures, and treble the value, or £100, at the option of the Commissioners.

Clause 18 defines a wholesale dealer in spirit mixtures, to be "a person who deals in or sells spirit mixtures in a quantity of a quart or more at a time, and the term 'spirit mixtures,' shall include, except as aforesaid, ether, sweet spirits of nitre, camphorated spirits, lavender water, and other perfumes, being spirits scented with essential oils, flowers, or other ingredients, compound spirits of lavender, spirits of rosemary, spirits of ammonia, sal volatile, friar's balsam, compound tincture of benzoin, tincture of asafœtida, castor, kino, guaiacum, myrrh, ginger, and spirit varnishes, and all other tinctures and medicated or scented spirits, mixtures and preparations, made with or from spirits, and all residue arising from the manufacture of such spirit mixtures containing spirits, and all spirits reclaimed therefrom, under the denomination of 'residue' or 'reclaimed spirits.'"

Clause 19 continues the provisions of the Act 6 and 7th of William the Fourth.

Clause 20. And be it enacted, that this Act may be amended or repealed by any Act to be passed in this present session of Parliament. (A very necessary clause).

In several clauses of the Act, other Acts are recited, and the "penalties, forfeitures, provisions, clauses, matters, and things in the said recited Acts," are applied to this Act "as fully and effectually as if the same had been repeated and re-enacted in the body of this Act."

PROCEEDINGS OF THE CHEMISTS AND DRUGGISTS
IN REFERENCE TO
THE SPIRIT LICENCE AND DUTIES BILL.

Although we had no idea that this Act was in contemplation until nearly the end of July, and only received a copy of it on the 30th, it appears that several manufacturers and wholesale Druggists had been in communication with the Board of Excise for two or three weeks, and were favourable to the introduction of a law to protect themselves and others from a ruinous competition with persons who evaded the duty in the manufacture of spirit compounds. But in the course of these proceedings, it was discovered that the remedy proposed by the Excise was by no means free from objection, and the parties consulted on the original draft of the Bill were unable to obtain the modifications which they thought desirable. It was at that time intended that the Bill should only apply to the wholesale department; and in the definition clause the quantity constituting a wholesale dealer was fixed at a gallon, under the idea that this would exempt retailers from the operation of the Act. At the suggestion of some of those who objected to the Bill, the quantity was reduced from a gallon to a quart: and, we are told, that the motive for this suggestion was the desire to make the Bill more obnoxious to the retail trade, *for the express purpose of obtaining their assistance in opposing it.*

When the Bill was printed and made its appearance "on change," several of the wholesale Druggists appointed a

MEETING AT GARRAWAY'S,

On Monday, the 3rd of August, and invited three or four retail Chemists to join them.

JAMES DREW, Esq., having been called to the Chair,

It was *moved by* Mr. MOWBRAY; and *seconded by* Mr. YATES,

"That this meeting is of opinion that some of the provisions of the Bill now before the House of Commons, entitled 'A Bill to prevent the use of stills, &c.,' are impracticable, and undertake to prove the same upon a proper opportunity being afforded."

Proposed by Mr. DAVY; and *seconded by* Mr. ROPER,

"That a Deputation, consisting of Messrs. Drew, Mowbray, Roper, Davy, White, Thomas Herring, and Jacob Bell, be appointed to communicate with the Government."

As the Bill was to be read a third time on that evening there was no time to spare, and the deputation went immediately from the Meeting to John Masterman, Esq., M.P., who accompanied them to the CHANCELLOR OF THE EXCHEQUER.

Mr. Drew, the Chairman, explained in general terms the objections to the Bill, and its oppressive and impracticable nature, which statement was confirmed by the other members of the Deputation. The Chancellor of the Exchequer expressed his desire to modify the Bill if possible so as to meet these objections, and referred the deputation to the Board of Excise to discuss the details, appointing the following day, Tuesday, the 4th of August, at twelve, and consenting to defer the third reading until Thursday, the 6th.

MEETING AT BLOOMSBURY SQUARE.

On the evening of the same day (Monday, the 3d) some members of the PHARMACEUTICAL SOCIETY met at 17, Bloomsbury Square; but the notice being very short the Meeting was not numerous. The principal clauses of the Bill were read, and it was unanimously considered unjust and oppressive. It was resolved that a petition to Parliament should be prepared, to be kept in reserve, and presented in case the interview of the Deputation with the Board of Excise, on the following morning, should not be satisfactory. It was impossible in the short space of time intervening to communicate with the members at large, or to oppose the Bill with any prospect of success.

DEPUTATION TO THE BOARD OF EXCISE.

August 4.

BEFORE waiting on the Board of Excise, the Deputation (consisting of eight in the wholesale department and three in the retail) held a preliminary meeting at Mr. Herring's in Aldersgate Street. The retail Chemists who were present, contended that there was nothing to be done but to oppose and reject the entire Bill as absurd and impracticable, but their wholesale brethren who had been "behind the scenes," replied that the Government had resolved to pass the Bill in some shape, and that it would be wasting time to denounce it without proposing an amendment. Those who advanced this opinion, had prepared a written proposal, which being carried, the Deputation proceeded to the Excise office.

They commenced by objecting to the Bill altogether on principle, considering it so entirely inapplicable to the particular trade of a Chemist and Druggist, that it was useless to discuss it in detail, and requested to be allowed to propose an amendment. The Chairman of the Board replied that the Bill was absolutely necessary, on account of numerous frauds, which, in the present state of the law, could not be prevented. In providing the remedy for this evil, some inconvenience to the trade in general was unavoidable. If any of the provisions of the Bill could be shown to be *impossible*, they should be modified, but no other objection could be entertained, and the only discussion which could lead to any result, was on the several clauses of the Bill.

The clauses were therefore discussed *seriatim*.

The first objection was against the tax of two guineas to be imposed on all those who use stills or retorts. On this point the wholesale and retail departments were at issue, the former thinking two guineas scarcely enough "to make the trade respectable," while it was urged on behalf of the latter, that this sum was a severe tax on the retail Chemists in a small way of business. It was also stated, that as the sale of a quart of spirit mixtures constituted "a wholesale dealer," a large proportion of the retail trade would come under the Act on this ground. The solicitor of the Board observed, that the quantity had been reduced at the suggestion of some members of the trade. The object of this suggestion was explained, and the Board consented to change the word *quart* for *gallon*, inferring from the observation, that this was the only objection raised by the retail Chemists, which was altogether a misunderstanding.

The inconvenience of numbering and lettering every still and utensil was noticed, but the objection was overruled.

With respect to clause 7, it was stated, that spirit being constantly required in small quantities for dispensing, and various other purposes, it could not all be kept in one place, shop bottles being absolutely required. After some discussion, the Board consented to allow two gallons to be taken from stock for retail use in the shop.

Clause 7 prohibiting the reduction or purchase of spirit below 43 above proof, was stated to be a serious inconvenience, proof spirit being constantly used in making the Pharmacopœia preparations, in some of which brandy was ordered. The Board replied that this clause was necessary to prevent the sale of spirits by Chemists as a beverage, but it would not be enforced in such a manner as to interfere with the regular business.

A long discussion ensued respecting the account to be kept of stock as enforced by clauses 10, 11, 12, and 14, and the Deputation emphatically declared the provisions laid down to be impracticable, involving an amount of labour and perplexity incompatible with the nature of a business in which so large a number of articles containing spirit are kept and used.

The Board was informed, that in the case of tinctures or any spirit compounds holding saccharine or extractive matter in solution, the specific gravity would be no criterion of the quantity of spirit contained (a fact which had been overlooked) yet the Chemist would be obliged whenever required by an Excise officer, to assist in taking the specific gravity of all or any of his spirit compounds, several hundred in number. It was demonstrated, that to keep the separate accounts in the stock books, of the several spirit mixtures, with the Debtor and Creditor account of spirit of wine, as required by the Act, would entail so much labour, that extra hands would be required; and that these provisions of the Bill were so intricate and unreasonable, and the penalties so heavy, that the Chemist would be in a state of constant alarm and perplexity. The Board contended that it was absolutely necessary to keep some account of the stock, but consented to reduce the number of spirit mixtures, by excluding all the Pharmacopœia preparations, except ether, sweet spirits of nitre, camphorated spirits, spirits of rosemary, spirits of ammonia, and sal volatile: all preparations containing spirit, but not in the Pharmacopœia, being still included in the term "spirit mixtures."

The Board also consented to allow any quantity not exceeding two gallons of spirit mixtures, to be removed without a permit.

The above modifications having been made, the Deputation admitted that their objections had been met to a considerable extent, but still objected to the general interference of the Excise officers with their stock, and the tax of two guineas on retail Chemists was also protested against. Being informed that some concession on their part must be made, and that any further mutilation of the Bill would destroy its efficacy, they thanked the Board for the courteous manner in which their remonstrances had been discussed during the conference, which had lasted above three hours, and retired with feelings resembling those of a man, who, having been stopped on the highway, surrenders his money and his watch, and thanks the gentleman for not cutting his throat.

MEETING OF THE COUNCIL OF THE PHARMACEUTICAL SOCIETY.

On the following morning (August 5th) the result of the above conference with the Board of Excise was reported at a Meeting of the Council of the Pharmaceutical Society, and the subject was discussed. It was the general opinion that the Bill in any shape was a great misfortune, but it could not be denied that considerable concessions had been made, and it was doubtful whether any advantage would result from another appeal to the Board of Excise. As the Bill was to be passed in about twenty-four hours, it was impossible to make any demonstration in Parliament, and the petition in course of signature was useless, being inapplicable to the amended Bill. It had always been the policy of the Council to avoid placing the Society in a position hostile to the Government, and this being a government Bill it was resolved not to make a display of opposition which, under the circumstances, could answer no good purpose, and might bring the Society into discredit. But the members of the Council feeling individually the responsibility which rested on them, considered it their duty to use all the influence they possessed to impress the Chancellor of the Exchequer with a due sense of the injustice which would be inflicted on their whole body if the Bill were hastily passed, without giving the members at large, and especially the retail Chemists, an opportunity of considering its provisions.

At the same time it must be confessed that but little, if any, hope existed of effecting any material alteration in the Bill. The trade was paralyzed and in a state of despair. The wholesale Druggists had entirely given up the case as hopeless. and considered it useless to make any further exertion. In the Retail Department there was some disposition among the few individuals who had seen the Bill, to make one vigorous effort, but the prospect was so discouraging that it is doubtful whether any effective steps would have been taken if Mr. Wakley had not come to the rescue.

On the same day (August 5) in the afternoon, the Editor of this journal received a message from Mr. Wakley, asking him to call in Bedford Square on the following morning, on which occasion he enquired what the Council of the Pharmaceutical Society, and the Chemists and Druggists generally, were doing with respect to the Spirit Licences Bill, the provisions of which, he said, had first caught his eye on the previous day; that circumstance having induced him immediately to make the inquiry.

In reply to this question, the circumstances as they have above been related were explained, and Mr. Wakley was informed that the matter had been arranged, so far as appeared practicable, with the Chancellor of the Exchequer and the Chairman of the Board of Excise, by a deputation hastily brought together and consisting chiefly of wholesale Druggists. The arrangement however, was by no means satisfactory, and the opposition to the Bill had only been abandoned from a conviction that, after what had been stated by the Government, and considering the advanced position of the Bill, it was *utterly useless* then to oppose its further progress.

Mr. Wakley stated that the provisions of the Bill were of such a nature that probably thirty thousand tradesmen would be affected by it, and put under the Excise, as well as a great many Medical Practitioners; and that it would absolutely almost prevent Chemists and Druggists from carrying on their business,—that to give up the opposition was folly; that he felt confident that the Bill could be further resisted, and successfully resisted, and that it would be impossible, when its character was understood, that such a measure could be enacted into a law. The motion for the third reading of the Bill was to come on on that day, at twelve o'clock, and if Mr. Bell would be at the House at that time, he would see the Chancellor of the Exchequer, and would then soon learn whether there was any use in offering a determined opposition to a Bill which proposed to put all the Chemists and Druggists in the kingdom under the full pressure and tyranny of the Excise laws. This proposal was gladly assented to—and the following is a report of the Proceedings in the

HOUSE OF COMMONS.

On Thursday (August 6th), the Chancellor of the Exchequer, on moving the third reading of the Bill, stated that some objections had been raised against it by the Chemists and Druggists; that a deputation of that body had waited on him, and he had referred them to the Board of Excise to discuss the Bill. He was glad to hear from the Chairman of the Board that a mutual arrangement had been made, which was satisfactory to all parties. The alterations agreed upon would be fully carried out in the amended Bill.

Mr. Wakley observed that it was quite a mistake to suppose that the Chemists and Druggists were satisfied with the Bill. The deputation, who had been said to have agreed to it, consisted chiefly of wholesale Druggists, to whom the Bill would probably be less injurious than it would to the retail. No time had been allowed for considering the Bill; in fact the retail Druggists (with the exception of a few in London) had not even heard of its existence. The Bill would place under the Excise thirty thousand persons of different trades, hitherto free from that oppressive jurisdiction, and he (Mr. Wakley) protested against so severe a measure being hurried through the House at the close of the session. The Excise laws, under all circumstances, were highly objectionable, and the feeling against them was so increasingly strong, that no extension of their influence ought to be attempted, unless a case of absolute necessity could be proved. If such a Bill were to pass, the members of the House would be sure to hear complaints loud and long from their constituents. He trusted the Chancellor of the Exchequer would consent to defer the third reading of his Bill for ten days, in order that the Chemists might have time to consider it. No factious opposition would be made, but a *boná-fide* opposition, on principle, with a desire to assist in modifying the Bill so as to prevent its injurious operation.

Sir De Lacy Evans confirmed the above statement, and protested against the passing of the Bill so hastily, without allowing the parties concerned the opportunity of investigating it. He trusted the request would be granted.

Mr. Hume considered it a very serious matter to place so many thousand persons under the Excise laws. Before such a step was taken, a case should be proved, and the necessity demonstrated. He had heard no case brought before the House which would justify such a measure, and should move that the Bill be re-committed, and evidence taken to satisfy the House on the subject before the Bill was passed.

The Chancellor of the Exchequer explained the circumstances which had led to the introduction of the Bill. It was a case of necessity, the Commissioners of Excise being at fault on account of the defective state of the law, and the numerous frauds which prevailed among dealers in spirit-compounds in consequence.

Mr. B. Escott objected to the Excise laws in general, and considered it unjust to place any class of the community under those laws unless a very strong case could be proved, showing the most urgent necessity.

The Chancellor of the Exchequer replied that he did not wish to place the Chemists under the Excise laws generally, but merely under the particular law now before the house.

Mr. R. Yorke and other members spoke in favour of delaying the passing of the Bill.

In reply to the request of the honourable member for Finsbury, that he would postpone the Bill, the Chancellor of the Exchequer stated that, what he proposed was this, namely, that he would take the third reading then, and postpone the motion " that the Bill do pass," until that day (*Thursday*) week. The amended Bill would then be reprinted, and the parties interested would have one week to consider the Bill in its amended form. He hoped that that proposal would give satisfaction.

Mr. Wakley submitted that he would agree to the third reading *then*, if the motion " that the Bill do pass" were *postponed until Monday week.* The extraordinary propositions contained in the measure, he said, required such a delay. At present the Chemists and Druggists in distant places knew nothing of the Bill, and full time ought to be allowed for making them acquainted with its provisions. As the Bill was now framed, it would throw open all their houses to the continual and never-ending intrusion of the Excise officers, in whose presence they were constantly to be " taking stock," and keeping a debtor and creditor account of the spirits they might receive and consume. Surely, under such circumstances, the time he had asked was not too long. The Bill itself, in its reprinted shape, would not be delivered before Saturday. To allow until *Monday week*, therefore, would only be giving a single week for the further consideration of the Bill.

The Chancellor of the Exchequer ultimately consented to reprint the Bill with the amendments, and to proceed no further with it until Monday, the 17th, the time claimed by the hon. member for Finsbury.

After hearing the proceedings on the Bill, as above reported, Mr. Bell was introduced to the Chancellor of the Exchequer by Mr. Wakley, in the House of Commons, and explained at length to the right hon. gentleman, the objections which the Council of the Pharmaceutical Society, and all the Chemists and Druggists with whom he was acquainted, entertained against the Bill.

The Chancellor of the Exchequer expressed his astonishment at the opposition which had just been raised in the House, as he firmly believed that the whole matter had been settled, and so fully had he entertained that opinion, that he had consented that the Chairman of the Board of Excise should leave London to join his family in the North of England, whither he had gone; but now he must be requested to return.

FURTHER PROCEEDINGS OF THE PHARMACEUTICAL SOCIETY.

A REPRIEVE of ten days having been granted, a Meeting of the London Members was summoned by order of the President and Vice-President, for Wednesday, the 11th inst., and a Circular was sent to the Provincial Secretaries, requesting them to call Meetings of the Members in their respective localities, and to forward without delay Reports of the sentiments expressed respecting the Bill, copies of which were sent to all parts of the country.

It was stated in the Circular that, as the Chancellor of the Exchequer had consented to settle the terms of the Bill by private arrangement, petitions to Parliament were unnecessary, and it was requested that the opinions of the Members might be sent in the form of "Resolutions," particular care being taken to avoid any proceedings which might have the appearance of a hostile demonstration, or factious opposition to the Government.

The Circulars produced an extensive correspondence throughout the country, and the dread of the threatened Excise restrictions was universal.

MEETING OF
THE MEMBERS OF THE PHARMACEUTICAL SOCIETY,
AT No. 17, BLOOMSBURY SQUARE,
ON TUESDAY, THE 11TH OF AUGUST, 1846.

JOHN SAVORY, ESQ., PRESIDENT, IN THE CHAIR.

THE CHAIRMAN informed the Meeting that he had felt it to be his duty to summon the members of the Society, for the purpose of considering the provisions of a Bill, which was to pass the third reading in two days. This Bill had come down upon the Chemists like a clap of thunder, without notice, and without any opportunity being afforded for remonstrance, or even the expression of an opinion on the subject. If allowed to pass in its present form, it would subject every Chemist who used a still or retort to very stringent Excise regulations, the nature of which would be best understood by reading some of the principal clauses. The Chairman having explained the general nature of the Bill, and read the most objectionable clauses, observed, that the Chancellor of the Exchequer, in compliance with a request on behalf of the Society, had consented to defer the third reading of the Bill until Monday, the 17th inst.; and circulars had been sent to the local secretaries requesting them to take the sense of the members in their respective localities on the subject. Between thirty and forty answers had already been received (by return of post), the members in every case being unanimous in the adoption of a resolution expressing a desire "to assist Her Majesty's Government, as far as may be practicable, in the adoption of such measures as appear requisite for preventing frauds on the Excise, alike injurious to the revenue, and to the interests of honest tradesmen—at the same time, considering that a law subjecting all retail Chemists who use stills or retorts in making spirit compounds, to an annual tax of two guineas, and to the inquisitorial supervision of Excisemen, as well as obliging them to render an account of all spirit received, and of the mode of appropriation of each portion of it, would be a serious and unnecessary obstruction to business, and an infraction of their privileges as Pharmaceutical Chemists." The Chairman said he should be glad to hear the sentiments of the Meeting on the subject.

Mr. Mowbray thought it might be as well to state the circumstances which led to the introduction of the Bill. The Board of Excise had recently had occasion to prosecute several parties for dealing in sweet spirit of nitre made with illicit spirit, but had failed in enforcing the penalties on account of the defective state of the law, which, at present, does not apply to preparations of that description. In this emergency the Board of Excise had represented to the Chancellor of the Exchequer that some immediate amendment in the law was absolutely necessary: to remedy which deficiency the Bill in question had been prepared. This had apparently been framed after the model of the Rectifiers' Bill, and was not at all adapted to the purpose for which it was intended. It might answer for the business of a rectifier, who deals in not more than two or three articles; but was totally inapplicable to the complicated business of a Chemist. He (Mr. Mowbray), with some other members of the wholesale trade, had been from the beginning in communication with the Board of Excise, and had objected to some parts of the Bill as being impracticable, but could not prevail on the Board to withdraw it. Several important alterations, however, had been made, at the request of a deputation, on Monday the 3rd; but he had subsequently observed, on reference to some other Acts of Parliament quoted in the Bill, and made applicable to parties licensed under it, that it was impossible without further investigation to state the extent of the evil. All must agree that it was, under any circumstances, a hardship to be subjected to Excise laws, which are in general very vexatious and arbitrary in their operation.

Mr. Morson moved the first resolution:—

"That this Meeting having considered the several Provisions of the Spirit Licence and Duties Bill now before the House of Commons, is unanimously of opinion that its operation would be highly unjust and injurious to Chemists and Druggists; and thinks that a measure so oppressive ought not to be brought forward and hurried through the House at this late period of the session."

Mr. Morson concurred in the sentiments expressed by the last speaker in a general condemnation of the Bill—that the interference of Excise officers with the stock of the Chemist would be extremely annoying, and, in many cases, unjust. According to the sixth clause, any improved processes which might have been the result of much labour and research, would be under the immediate supervision of these officers, who would have it in their power to disclose such information, and thus deprive the inventor of the reward to which he was entitled. He considered the Bill quite inapplicable to the business of a Chemist, and would be very glad to see it withdrawn altogether.

Mr. Ince seconded the resolution, which was carried unanimously.

Mr. Jacob Bell moved the second resolution, namely:—

"That this Meeting is desirous to assist Her Majesty's government as far as may be practicable in the adoption of such measures as appear requisite for preventing frauds on the Excise; but considers that the Bill in question is not calculated to attain this object: on the contrary, some of its provisions would by their intricacy and impracticability afford fresh opportunities for evading the law."

In support of the first portion of the resolution, he explained the circumstances under which the Bill had made its appearance, taking every one by surprise, and allowing no opportunity for opposition. On Thursday, the 6th, the Chancellor of the Exchequer was about to pass the Bill, and might have done so if he had thought proper. But he yielded to a remonstrance on behalf of the Society, at the intercession of several Members of Parliament, and allowed a respite of ten days, with the understanding that no factious opposition would be offered, but that every endeavour would be made to overcome the difficulties by mutual concession. The Bill did not emanate from the present government, but had been handed over by the late government, which, having repealed the Corn Laws, and thus recognised the popular principle of Free Trade, had singled out the Chemists and Druggists as an exception to the general rule, by preparing for them an Excise Bill, diametrically opposite in principle, and placing them under a class of laws the most despotic and arbitrary which could be imagined. It was true that some considerable modifications had been made in the Bill by the Board of Excise, and apparently assented to by a deputation. This deputation, however, had been in a very perplexing position, being called upon at the moment to decide on propositions without any time being allowed for mature consideration. They were, moreover, as much taken by surprise by the courtesy of the Board of Excise, as they had previously been by the Bill itself. Clause after clause was altered, and one objection after another was met in a manner which disarmed opposition: so that at last the deputation had no objection to offer except the general one, of being taxed and placed under the supervision of the Excise in the disposal of their stock. This objection, they were told, could not be overcome, and their only alternative was to accept the Bill as modified, or take it in its original form. On examining the second edition of the Bill, it was found still to be very vexatious and oppressive. The more it was investigated the more objectionable it appeared: from the intricate nature of its provisions and the manner in which other Acts of Parliament were involved in it. Some of the provisions in the Bill (for instance, clauses 11, 12, 14, &c.) were so perplexing that they appeared calculated to afford facilities for evasion, making honest men liable to a penalty for every trifling error in their stock account; while a rogue could at any time, by one false entry, make his account balance and evade the law. It appeared almost impossible to modify the present Bill so as to make it unobjectionable; but it would be comparatively easy to suggest a plan less complicated and oppressive, which would furnish considerable protection to the revenue.

Mr. Barkley seconded the resolution. He considered it derogatory to Chemists, whose business was rather professional in its character, to be subject to the constant visits of excisemen, and thus placed on a level with publicans and the retailers of ordinary spirits. He thought it a fortunate circumstance that a Society existed, one of the objects of which was to watch over the interests of the body at large. Had it not been for such vigilance, this very oppressive Bill might have passed before any Chemist and Druggist had the opportunity of considering its probable operation.

Mr. White observed, that he had been concerned, perhaps, more than any one present with the framing of this measure, having been from time to time in communication with the Board of Excise on the subject during its whole progress. He considered the Bill in its present form highly objectionable, and that the deputation who waited on the Board on Saturday would have acted wisely if they had adhered to their original determination not to entertain the Bill at all. He stated that he was a manufacturing Chemist, and that many of his processes were his private property, from which his subsistence was derived, and that if the excisemen were admitted constantly to an inspection of his operations, he would no longer possess the advantage which he at present enjoyed in consequence of his own researches and skill. It was well known in the soap trade, that if any manufacturer happened to introduce any improvement, a new kind of grease for example, the secret was communicated (through the excisemen) to the whole trade within a fortnight. In a recent debate in the House of Commons, in which it was proposed to reduce the duty on rum, the Chancellor of the Exchequer had admitted that illicit distillation existed only to a small extent in this country, so that it could not be said that there was any urgent necessity for passing the Bill this session.

The resolution was then carried unanimously.

Mr. Squire moved—

"That this Meeting considers that the object sought to be effected by the Bill now before the House, might be as effectually attained by a measure more simple and much less oppressive; namely, the Registration of all Buildings in which Stills are kept or used—licensing Wholesale Manufacturers and Dealers—and requiring Permits for the removal of spirit mixtures when above a certain quantity."

Mr. Hallows seconded the resolution.

Mr. Morson supported the resolution. He considered the registration of premises in which stills are used, the most important provision for the security of the Excise, and as effectual as the registration of each individual implement—a regulation excessively troublesome; in fact, in many cases, impracticable.

Mr. Waugh doubted whether it was in accordance with the object of the Meeting to make any proposition. The members has assembled to consider a Bill which had only been before them a few hours. Time had not been allowed for coming to any definite and satisfactory conclusion, and he should be glad to see the resolution terminate at the word "oppressive." He would move as an amendment that the second clause of the resolution be omitted.

Mr. Hudson seconded the amendment. He thought it premature to propose any plan without having maturely considered it in all its details.

Mr. Jacob Bell considered it his duty to support the original resolution. A reprieve of ten days had been granted to the Pharmaceutical

Society by the Chancellor of the Exchequer, with the express understanding that some proposition was to be made by which the objections raised against the Bill might be removed, without destroying the efficacy of the Bill. He considered it the object of the Meeting to make a proposition, and thought the original resolution free from objection.

Mr. **Drew** and Mr. **Pedler** supported the original resolution.

Mr. **Walker** thought the Meeting was going over the same ground a second time. A resolution had been passed objecting to the Bill, and another expressing a disposition to assist in the adoption of some other plan. The resolution which had been proposed was very little more than a confirmation of the other two. He saw no objection to it as originally moved.

The **Chairman** then put the amendment, which was lost, and the original resolution, which was carried.

It was *moved by* Mr. **Gifford**; *seconded by* Mr. **Wilkinson**,

Resolved unanimously—"That the Thanks of this Meeting are due to the Chancellor of the Exchequer for his courtesy in postponing the passing of the Bill until Monday, the 17th instant."

Moved by Mr. **Ward**; *seconded by* Mr. **Squire**,

Resolved unanimously—"That the Thanks of the Meeting be given to John Savory, Esq., for his efficient services as Chairman."

MEETING OF DRUGGISTS AND CHEMISTS AT THE HALL OF COMMERCE, August 12.

From the commencement of the anti-excise movement, two parties were engaged, namely, the Committee of Wholesale Druggists and the Pharmaceutical Society. These parties were, more or less, identified with each other, as many individuals acted with both,—yet each took its own course, held meetings, and issued circulars, both striving to attain the same result, without professing to adopt the same policy.

On the 12th August, a meeting was held at the Hall of Commerce, James Drew, Esq., in the chair, and a Report of the Deputation which had waited on the Board of Excise having been read,

It was *moved by* Mr. **Preston**; and *seconded by* Mr. **Hill**, and

Resolved,—"That the Report be received."

Moved by Mr. **Davy**; *seconded by* Mr. **Roper**, and

Resolved,—"That this meeting having considered the provisions of the Bill as amended, is still of opinion that they are impracticable; inasmuch as they would impose upon the fair trader a vast amount of trivial and vexatious detail, impossible to be carried out, while it would enable the illicit dealer to protect himself from the penal consequences of delinquency."

Moved by Mr. **White**; *seconded by* Mr. **Mowbray**, and

Resolved,—"That this meeting views with alarm and distrust the principle attempted to be carried out, that commodities of British manufacture, upon which the Excise duty has been paid, as proved by permit, should subject the dealers in it, and their stocks and very numerous processes, many of them of a very trivial nature, to the inquisitorial supervision of the Excise officers—an infringement upon the rights of a large and respectable body of men who have hitherto been free from such restrictions."

Moved by Mr. Lescher; *seconded by* Mr. Davy,

"That this meeting is exceedingly desirous to aid Her Majesty's Government in preventing frauds upon the revenue by all practicable means, and is of opinion that the registration of buildings in which stills are used, together with the licensing of manufactures and dealers—imposing heavy penalties upon persons purchasing from unlicensed dealers or manufacturers, will fully answer the object sought to be obtained."

The following amendment was *moved by* Mr. Barron; and *seconded by* Mr. Morson:

"That this meeting is exceedingly desirous to aid Her Majesty's Government in preventing frauds upon the revenue by all practicable means and is of opinion that the registration of buildings in which stills are used will fully answer the purpose sought to be obtained."

After some discussion, the amendment was carried.

Moved by Mr. Preston; *seconded by* Mr. Meggeson, and

Resolved,—"That the Committee be empowered to add to their number, and that they be requested to communicate again with the Chancellor of the Exchequer.

Moved by Mr. C. Barron; *seconded by* Mr. Hill, and

Resolved,—"That the Thanks of this Meeting are due to James Drew, Esq., and the Members of the Committee, for their exertions on behalf of the Trade."

Before the Meeting separated Mr. Barron was added to the Committee, and it was also resolved to obtain the assistance of a legal adviser.

PETITIONS TO PARLIAMENT.

On Wednesday, the 12th of August, application was made to the Chancellor of the Exchequer on behalf of the Pharmaceutical Society for the favour of an interview, in order to report the sentiments of the members at large respecting the Bill, and to suggest a means of overcoming the objections. The Chancellor replied, that the Chairman of the Board of Excise being out of town, nothing could be settled until his arrival, and that he was not expected in town until Friday. It was, therefore, necessary to take some decided steps; for, *in the event of the interview on Friday being unsatisfactory*, the Council would be placed in a worse position than before, having failed in their efforts to effect the desired arrangement, and having no time to appeal to Parliament. It was not considered prudent to incur this risk, and in order to be prepared with the means of making an effectual appeal in case of need, a circular was issued on Thursday, the 13th, stating that it was found necessary to petition Parliament; and, by return of post, nearly 100 petitions were received. Many others were forwarded to the representatives in Parliament, and the post of Monday morning also brought a large number. In the mean time several petitions were sent round for signature in the different districts in London, and met with universal assent. Every rule has an exception. One Chemist refused to sign, saying that he would not take the trouble, as a Bill so absurd was not likely to pass.

Application was made personally, or by letter, to most members of Parliament. On account of the late period of the session, many were out of town, but all those who had an opportunity of hearing the merits of the case responded to the Appeal in a most satisfactory manner.

Up to the last moment hopes were entertained that the Chancellor of the Exchequer would withdraw the Bill without coming to a division, and endeavours were used to obtain an interview, for the purpose of representing the universal dread which prevailed at the prospect of coming under Excise jurisdiction. By this time the Committee of wholesale Druggists had become much more violent in their opposition than they had been in the first instance, their legal adviser having pointed out various objections which had previously escaped their notice, especially in reference to the operation of the other Acts cited in the new Bill.

The following Members of Parliament assisted in the defence:

Aldam, William
Bernal, Ralph
Bright, John
Craig, William Gibson
Dodd, George
Duncannon, Viscount
Escott, Bickham
Ewart, William
Evans, Sir De Lacy
Hawes, Benjamin
Hume, Joseph
Macaulay, Rt. Hon. T. B.
Masterman, John
Philips, Mark
Wakley, Thomas
Warburton, Henry
Yorke, H. R.

We understand that many other Members responded to the applications of their Constituents on the subject; but the correspondence having taken place with the local Secretaries of the Society, we are not in possession of the particulars.

The chief credit of obtaining the delay of ten days in the passing of the Bill is due to Mr. Wakley, whose efforts on that occasion, as well as at other times, were warmly seconded by Sir De Lacy Evans, Mr. Hume, Mr. Dodd, Mr. Yorke, and Mr. Escott.

AT A MEETING OF CHEMISTS AT EDINBURGH,

On the 13th of August, the following Resolutions, among others, were unanimously adopted, and Mr. J. F. Macfarlane was deputed to wait on the Chancellor of the Exchequer and Commissioners of Excise in London:—

"1. That it is the opinion of this Meeting, that the Bill now before Parliament, called the "Spirit Licences Bill," is most objectionable in principle, and, as far as Scotland is concerned—owing to the duty on spirits being so much lower than in England—perfectly uncalled for.

"2. That this Meeting has no hesitation in asserting that the Chemists and Druggists of Scotland are entirely free from the practice of using Illicit Spirit, and that no suspicion of their doing so attaches to them.

"3. That whilst this Meeting believes that the Trade in Scotland would willingly purchase an exemption from the difficulties attendant upon the sale of spirit of wine, by the annual payment of a licence, it strongly deprecates the express object of this Bill, which is to place the Trade under the restrictions of the Excise Laws, which have always been found harassing and vexatious, and only justifiable for the protection of the revenue.

"3. That this Meeting considers that the Chemists and Druggists, not only of Edinburgh, but of Scotland, are greatly indebted to the Members for the City and Leith, the Right Hon. T. B. Macaulay, Mr. Gibson-Craig, and the Lord Advocate, for the prompt attention they have shown to their interests; and that it cheerfully adopts the advice of Mr. Macaulay to send up a Member of their Trade to lay their views before the Chancellor of the Exchequer and the Commissioners of Excise."

DEPUTATION TO THE CHANCELLOR OF THE EXCHEQUER.

In consequence of urgent appeals from various quarters, requesting the favour of an interview, the Chancellor of the Exchequer received a deputation in Downing Street on Saturday, August 15th, Mr. Wood, the Chairman of the Board of Excise, Mr. Hart Davis, the Deputy Chairman, and Mr. Carr, the Solicitor, were present at the conference. A large number of Chemists and Druggists attended, among whom were representatives of the Committee of Wholesale Druggists, and of the PHARMACEUTICAL SOCIETY, with deputations from Edinburgh and Manchester, accompanied by their representatives in Parliament, Mr. Gibson Craig and Mr. John Bright. Mr. Hendrie attended on behalf of the Perfumers, and Mr. Low, the Solicitor of the Druggists, was also present. Mr. Drew, acting as Chairman, stated concisely the grounds upon which the Bill was opposed; namely, that it was unconstitutional to follow an article of British manufacture which had paid the duty, as proved by permit, into all the ramifications of retail consumption: that it was unprecedented, inasmuch as no other article than spirit of wine was thus trammelled. The Bill was also objected to as impracticable, but this point having been already argued at much length, it was unnecessary to occupy time by repeating these objections in detail.

The Chancellor of the Exchequer replied, that he was disappointed at hearing that the arrangement between the Board of Excise and the deputation of Druggists was not so satisfactory as the report of the Chairman of the Board had led him to believe. He had hoped, that the objections had been met, and the difficulties surmounted. Having been informed, however, that this was not the case, he was quite disposed to listen to any further observations, and had anticipated that some proposition for amending the Bill would have been offered on the present occasion. He was surprised to find that the Bill was denounced altogether; and was not at all prepared for that kind of opposition after what had previously occurred.

Mr. Wood, the Chairman of the Board of Excise, expressed his astonishment at the opposition now offered, having fully believed that the amendments introduced into the Bill had removed all objections. So completely had he been impressed with this belief, that he had left town considering his labours at an end.

It was stated in explanation that the former deputation did not represent the body at large, no time having been allowed for calling a general meeting; that a few members of the trade had on the emergency come forward, and being taken by surprise, were not aware at the time of the full extent of the injury the Bill would inflict; that, moreover, the Bill as reprinted did not accord with what they had been led to expect at the interview with the Board of Excise—the words "or preparations made from or with spirits" having been introduced. This involved the stock account in much confusion, two classes of compounds being comprised in it: namely, one class defined as "spirit mixtures," the other not defined at all. It was urged that the provisions respecting the account of stock while inflicting most serious inconvenience and expense on the honest tradesman, might easily be evaded by the dishonest.

The evils of Excise restrictions on trade were pointed out, namely, the discouragement to industry, the injury of many British manufacturers, who could not compete with those of other nations; the loss to the revenue by the limitation in the use of spirit in various processes to which it might advantageously be applied, and the obnoxious interference of Excise officers with private chemical operations. Several members of the deputation spoke with considerable warmth; at the same time regret was expressed at the necessity which existed for opposing a government measure. Mr. Macfarlane, on behalf of his brethren in Scotland, remonstrated against the extension of the Excise jurisdiction in that country, observing that there was no ground for inflicting this annoyance, the duty being so low in Scotland that no encouragement for smuggling existed.

The Chairman of the Board of Excise stated that he was in a condition to prove that illicit spirit was sold to a great extent in the North of England, and that very large quantities of sweet spirit of nitre and other spirit mixtures were made in various parts of the country from spirit which had paid no duty. During a journey of ten days in the North, 1500 invoices of spirit from an illicit distillery had recently been collected.

The distillery had been subsequently broken up. Some members of the deputation expressed a doubt whether, in the case alluded to, the parties purchasing the spirit were aware that it was illicit. It was also remarked that by equalizing the duty, the inducement to smuggle would no longer be greater in this country than it now is in Scotland.

The Chancellor of the Exchequer assured the deputation that he would seriously consider the arguments on both sides, and communicate his final decision on Monday, when the Bill would come before the House of Commons.

MEETING OF
DRUGGISTS AND CHEMISTS AT THE HALL OF COMMERCE.

Saturday Evening, August 15th.

JAMES DREW, ESQ., IN THE CHAIR.

Moved by Mr. Mowbray ; *seconded by* Mr. Davy,

And resolved unanimously—" That this Meeting having maturely considered the Bill lately introduced into Parliament by Her Majesty's Government, intituled 'A Bill to prevent the use of Stills in the manufacture of 'Spirit Mixtures by unlicensed persons, and to regulate the sale thereof, 'and of Spirit of Wine, by persons licensed under this Act,' and having considered the provisions of the same, is of opinion that the proposed measure is objectionable in the highest degree, and totally uncalled for by any existing circumstances."

Moved by Mr. Tonge ; *seconded by* Mr. Roper,

And resolved unanimously—" That the regulations proposed to be sanctioned by the Bill would, if passed into a law, have the effect of rendering Chemists and Druggists in general, both wholesale and retail, and a numerous class of persons not makers of spirits, or otherwise at present subject to the jurisdiction of the Excise, but who may happen to employ spirit of wine in any of their processes, or deal in articles into which spirit enters as a principal ingredient, and who cannot amount to fewer than 30,000 persons at the least, amenable to the Excise regulations ; and to the provisions of the Bill, which are, in many respects, highly inquisitorial, vexatious, arbitrary, and unjust, beyond the ordinary laws and regulations of Excise."

Moved by Mr. White ; *seconded by* Mr. Preston,

And resolved unanimously—" That such an extension of the jurisdiction of the Excise is unconstitutional and most objectionable and obnoxious, and, in the opinion of this Meeting, no existing state of circumstances could justify the introduction into Parliament of a measure of so important and objectionable a character at any moment, and still less so at this late period of the session."

Moved by Mr. W. Squire ; *seconded by* Mr. Yates,

And resolved unanimously—" That this Meeting pledges itself to use its utmost endeavours to prevent the Bill in question from being passed into a law."

Moved by Mr. Gifford ; *seconded by* Mr. Hill,

And resolved unanimously—" That these Resolutions be published in the *Times*, the *Morning Post*, the *Morning Chronicle*, the *Morning Herald*, the *Daily News*, the *Public Ledger*, the *Globe*, and *Sun* newspapers."

Moved by Mr. Preston : *seconded by* Mr. Howard,

And resolved unanimously—" That the best Thanks of this Meeting be presented to the Chairman, as well for his conduct in the chair this day as for the energy and ability he has displayed in watching over the interests of the trade on the present occasion."

HOUSE OF COMMONS—PASSING THE BILL.

On Monday, August 17, the representatives of the Pharmaceutical Society attended at the House, and were informed by the Chancellor of the Exchequer, and the Chairman of the Board of Excise, that it was decided to erase from the Bill all the clauses excepting those which related to the registration of stills, and that the licence was reduced to one guinea. This was pronounced to be very satisfactory, with the exception of the amount to be paid for the licence, which, after some conversation, was reduced to ten shillings. A copy of the amended Bill was then submitted to the Committee of Wholesale Druggists, who were in attendance with the Solicitor. All the objectionable clauses having been removed, the result was pronounced to be quite satisfactory, and Mr. Wakley was requested to state in the House that all opposition was withdrawn.

The following is a copy of the Bill as finally agreed upon and passed :—

AN ACT TO PREVENT THE USE OF STILLS BY UNLICENSED PERSONS.

Whereas by an Act passed in the sixth year of the reign of his late Majesty King George the Fourth, intituled "An Act to repeal several Duties payable on Excise Licences in Great Britain and Ireland, and to impose other Duties in lieu thereof, and to amend the Laws for granting Excise Licences," a licence duty of ten shillings is imposed upon every person in Scotland or Ireland, not being a distiller, rectifier or compounder of spirits, who shall keep or use any still for carrying on the trade of a Chemist, or any other trade or business requiring the use of any still or stills; and whereas it is expedient to impose one uniform duty for the United kingdom.

Be it therefore enacted, by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords spiritual and temporal, and Commons, in this present Parliament assembled, and by the Authority of the same, That from and after the passing of this Act, there shall be raised, levied, collected and paid unto Her Majesty, her heirs and successors, in and throughout the United Kingdom of Great Britain and Ireland, the duty of Excise following; (that is to say)

> For every Excise Licence to be taken out by every person, not being a licensed distiller, rectifier or compounder of spirits, or vinegar maker, who keeps or uses any still or retort, the sum of ten shillings.

And be it enacted, that every such licence shall be renewed yearly, and the said sum of ten shillings shall be yearly paid by every person keeping or using any still or retort, so long as any still or retort is kept or used as aforesaid; and every such licence shall be in force until the fifth day of July in each year, and shall then expire; and if any person keeps or uses any still or retort without taking out such licence as by this Act required, or without renewing the same as aforesaid, every person so offending shall forfeit the sum of fifty pounds; and all provisions, clauses, matters and things contained in the said recited Act of the sixth year of King George the Fourth shall be applied to this Act, and to the several provisions, clauses, matters and things in this Act contained, as fully and effectually as if the same had been repeated and re-enacted in the body of this Act.

And be it enacted, that the duty by this Act imposed shall be under the management of the Commissioners of Excise for the time being, and shall be raised, levied, collected, recovered, paid over and accounted for in such and the like manner, and in or by any of the general or special ways, means or methods by which any other duties of Excise are or may be raised, levied, collected, recovered, paid over, and accounted for, and all such licences respectively shall be in such form as the Commissioners of Excise direct, and shall be granted by the said Commissioners, or their officers duly authorized to grant licences under any law or laws of Excise.

And be it enacted, that every still, or still-head or worm of a still, shall be forfeited which is found in the custody or possession of any person not being a person known as a regular maker of stills, and if in Scotland or Ireland being a person licensed in that respect, and such still, still-head or worm being gauged or marked as there by law required, and if in Ireland being accompanied by permit on removal thereof, and such person not being a licensed distiller, rectifier or compounder of spirits, or vinegar-maker, or a person licensed to keep and use such still under this Act: Provided always, that the Commissioners of Excise may permit the keeping and using of any still or stills for experiments in chemistry, under such regulations as they think fit; and provided also, that the Commissioners of Excise may permit the keeping and using of any still or stills by persons carrying on trade or otherwise for the manufacture of any articles other than spirits or spirit mixtures, or preparations made from or with spirits, upon every person who has a still, giving notice thereof to the nearest officer of Excise, and conforming to such regulations as the Commissioners of Excise think fit to direct, before beginning to use any still as last aforesaid.

And be it enacted, That this Act may be amended or repealed by any Act to be passed in this present session of Parliament.

OBSERVATIONS ON THE RESULT OF THE OPPOSITION.

We have reported the above proceedings in detail, for the information of those Members in the country who may feel interested in the subject. It must not be considered that the question is finally settled. It is true, that the objectionable clauses of the Bill are struck out, and nothing remains but a provision for the registration of stills, with a small annual payment, to which we think no reasonable objection can be made, especially when this is compared with the Bill in its original state.

The modified Bill as passed, will bring under the cognizance of the Commissioners of Excise all stills and retorts, which, to a certain extent, will operate as a check to illicit distillation. It still remains to be ascertained whether this will effectually prevent the frauds on account of which the Bill was introduced.

It is the duty as well as the interest of our body, in the event of the Bill proving insufficient, to come forward voluntarily to assist the Commissioners of Excise in preparing a Bill which shall fully answer the purpose required, without containing any provisions unnecessarily oppressive and stringent. If we shrink from this duty, and if the Bill should be found inefficient, the inevitable result will be, that the Commissioners of Excise will appeal to facts, in corroboration of their previously expressed opinions, and repeat the endeavour to place our whole body under their subjection.

TRANSACTIONS
OF
THE PHARMACEUTICAL SOCIETY.

ABSTRACT OF A LECTURE

ON THE INFLUENCE OF COHESION AND ADHESION ON THE BOILING AND EVAPORATION OF LIQUIDS.

BY MR. T. REDWOOD,
Professor of Pharmacy to the Pharmaceutical Society of Great Britain.

If water be heated in a metallic vessel over the flame of a lamp or other source of heat, the temperature will increase until it arrives at 212° Fahr., and, if the barometer be at its mean height, no further increase of temperature will take place, but bubbles of steam will be formed where the liquid is in contact with the most heated part of the vessel, and these bubbles passing through the liquid, constitutes what is called *ebullition*.

The steam thus generated will have the same, or very nearly the same temperature, as the water from which it issues, namely 212°, and at this temperature it is capable of resisting the pressure of the atmosphere when the barometer stands at 29.9 inches; or in other terms, steam at this temperature has a sufficient elastic force to sustain a column of mercury of 29.9 inches.

These are the phenomena which usually present themselves on the boiling of water, and therefore it is generally stated that water boils when heated to 212°, and that it does so in consequence of the steam formed at that temperature having a sufficient elastic force to overcome the pressure of the atmosphere.

It has long been observed, however, that the boiling and evaporation of water and other liquids is, to a certain extent, influenced by the nature of the material of which the vessel containing the liquid is composed. It was noticed so long ago as the year 1812, by Gay-Lussac, that the boiling point of water was higher in glass than it was in metallic vessels. Indeed, every practical Chemist must have observed the difference in the manner in which liquids boil in glass and in metallic vessels. In the latter, the ebullition takes place uniformly and without interruption; the bubbles of steam, which rise through the liquid, are small, and they are generated equally from all parts of the vessel equally exposed to the heat. In the former, the ebullition takes place less uniformly; the bubbles of steam are much larger, and they are generated only from a few points on the surface of the vessel, and there often by fits and starts.

Gay-Lussac observed that there was sometimes a difference of two degrees Fahrenheit, between the boiling points of water in vessels of glass, and those of metal; but Marcet has since found that there is a greater difference than this when glass vessels are used which have previously been cleaned, by heating oil of vitriol in them.

The influence which is thus exercised upon the boiling point of a liquid, by the material of which the vessel containing the liquid is formed, is not confined merely to glass and metals, nor is water the only liquid whose boiling point is thus affected.

Earthenware vessels present nearly the same results as those of glass, but not always with the same liquids; and there are some liquids, such as ether, alcohol, and oil of vitriol, which undergo variations perhaps even greater than those which occur in the case of water.

The irregularity with which ebullition and evaporation take place, when these liquids, or mixtures containing them, are submitted to distillation in glass vessels, is a frequent source of annoyance and perplexity to the operator in the chemical or pharmaceutical laboratory, constituting, at its maximum degree, what is commonly called the "bumping" of the liquid.

This irregular boiling, accompanied by bumpings, occurs to a very great extent in distilling *oil of vitriol* in glass retorts, and the difficulty which it occasions in conducting the distillation in this way, has led to the use of platinum retorts instead of glass, by the manufacturers of oil of vitriol.

I have already alluded to the difference in the boiling of *water* in glass and in metallic vessels. The ebullition takes place in glass vessels very irregularly, but this irregularity seldom amounts to bumping. This phenomenon, however, occurs in many mixtures, of which water is the menstruum. The process of the London Pharmacopœia for the preparation of *hydrocyanic acid* presents an instance of this description. It is almost impossible to conduct this process in a retort without some portion of the solid ingredients being projected into the neck of the retort by the bumping which constantly occurs.

But I have met with no case in which this effect is produced to so great an extent, in an aqueous mixture, as it is in distilling *balsam of copaiba with water*, in a glass vessel. On commencing the process, the ebullition takes place with some degree of regularity, but it becomes more and more irregular as the process proceeds, until at last the bumping becomes so violent, as to render it impossible to continue the distillation, without danger of breaking the apparatus. I have seen half the contents of a retort projected with considerable violence into the receiver, by one of these sudden bursts of steam.

Similar phenomena occur in the boiling of alcoholic and ethereal solutions, especially those containing resinous substances.

It is not an uncommon occurrence, on heating a solution of this kind in a test-tube, to have the whole of the liquid projected out of the tube, with explosive violence.

These results must be familiar to those who have had practical experience in the operations of the laboratory. There are others, however, arising probably from the same causes, happily of less frequent occurrence, but of much more serious consequence when they do occur. I allude to the explosions of steam boilers. These explosions have been observed to occur under two very different conditions. In some cases the explosion occurs when the heat of the boiler is at the highest point to which it has been raised; in other cases it occurs some time after the over-heating of the boiler has taken place, and when the temperature has been considerably reduced, either by removing the fire, or by introducing more water into the boiler.

Several explanations have been given, with the view of accounting for these different phenomena.

The irregular ebullition of liquids, commonly called *bumping*, has been ascribed to the imperfect conduction of the heat from the vessel in which the liquid is contained; the accumulation of heat on the surface of such vessel, and then its sudden transmission to the liquid; it has also been ascribed to a kind of *vis inertia* in the liquid, and to the absence of solid points at which the vapour might be generated.

These explanations, however, are very imperfect and unsatisfactory.

More recently, an explanation has been proposed, which simply ascribes the effects alluded to, to the influence of the force of *cohesion* between the particles of the liquid, and the force of *adhesion* between the liquid and the vessel containing it.

Some curious and highly interesting results have recently been published in corroboration of this view, by M. Donné, a Belgian Chemist; by Mr. Henry, of Prince Town, in America; and by M. Boutigny of Paris.

The three conditions which matter is capable of assuming, namely, the *solid*, the *liquid*, and the *aëreform* or *gaseous*, are sometimes described as depending on two forces, existing in different degrees, the one tending to attract or hold together the particles, the other tending to repel them, or separate them asunder. In *solids*, the force of attraction is predominant; in *gases* the force of repulsion prevails; while in *liquids*, it is stated, these forces are so equally balanced, that the particles have perfect freedom of motion among each other.

It must not be supposed, however, that these forces are in a state of perfect equilibrium in liquids, or that the particles are not held together by a certain amount of cohesive force.

It is easy to prove that this force of *cohesion* exists, in all cases, between the particles of a liquid. A good illustration of it is afforded in the familiar experiment of blowing a soap-bubble. We may roughly estimate this force, by suspending a plate of glass to one end of a balance, adjusting the balance, then placing a vessel of water under the glass, and allowing contact to take place; it will be found that some force will be required to break the contact, which may be estimated by the weights put into the opposite pan of the balance.

An exemplification of the force of *adhesion* existing between a liquid and a solid body with which it is in contact, is afforded in the instances of capillarity, which are familiar to every one.

But it will be freely admitted that these forces exist. It must be evident, too, on considering what occurs in the boiling of a liquid, that these forces, in addition to the pressure of the atmosphere, have to be overcome by the repulsive influence of the heat. In the boiling of water, bubbles of steam are formed at the bottom of the vessel containing the water; and as the particles of the liquid are separated from the sides of the vessel, as well as from each other, on the formation of each bubble of steam, it is evident that the tension of the steam thus generated, must be equal to the pressure of the atmosphere, *plus* the force of *cohesion* between the particles of the liquid, and of *adhesion* between the liquid and the sides of the vessel containing it.

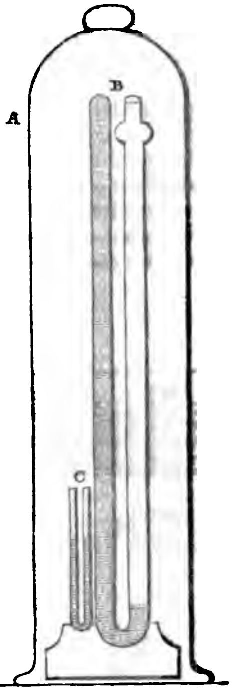
Now, when water is boiled in a metallic vessel, it has been found by Marcet, from some very carefully performed experiments, that the temperature of the steam after quitting the water, is about a third of a degree lower than that of the boiling water. This difference of a third of a degree, then, may be considered to represent a measure of the force of cohesion and adhesion in the water.

In glass vessels, the difference between the temperature of the steam after quitting the water, and that of the boiling water, amounts to more than the third of a degree, and this increased difference accords with the higher boiling point of water in glass than in metallic vessels. It is inferred, therefore, that the force of cohesion and adhesion are greater, when water is boiled in glass than in metallic vessels, and that this is the cause of the irregularity of the ebullition in the former.

But the extent to which the forces of cohesion and adhesion are capable of existing in water, cannot be at all estimated from the cases I have here adduced. Donné, in the investigation of this subject, has arrived at results which tend to show that cohesion and adhesion frequently exist in water and other liquids, to an extent far beyond what had previously been supposed.

Two very ingenious experiments have been devised by this

Chemist, to show the extent to which the forces in question may exist in liquids. It had been observed that the irregularity with which ebullition takes place in those liquids which are subject to bumping, always increases as the liquid is deprived of air by boiling. Donné conceived therefore, that these forces would be found to be most powerful in those liquids which were entirely free from air. He found that oil of vitriol introduced into the closed limb of an inverted syphon tube, and placed under the receiver of an air pump, was retained there in opposition to the force of gravity, through the power of cohesion and adhesion in the liquid.

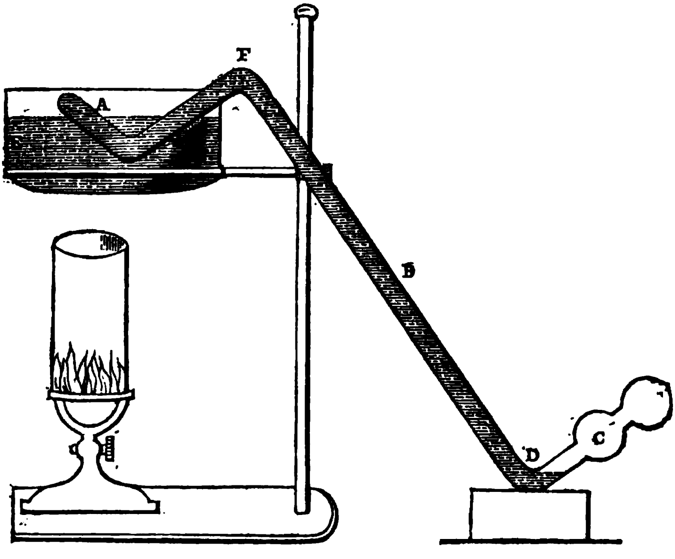


The apparatus figured in the margin, will illustrate this experiment. The closed limb of the tube *B* is filled with oil of vitriol, and the corresponding limb of the smaller tube *C*, is filled with mercury. The tubes being fixed to a stand, are placed under the receiver *A*, over an air-pump, and the air is then pumped out. The tube *C*, containing the mercury, will indicate the degree to which the receiver is exhausted. A great number of air bubbles will be extricated from the oil of vitriol as the exhaustion proceeds, and it will be necessary to re-admit the air into the receiver, and remove the portion of air which will be found to have collected in the top of the closed limb of *B*, as long as any air continues to be disengaged from the oil of vitriol, on exhausting the receiver. This will not be completely effected in less than six or eight days.

On commencing this operation, it will be observed that the height of the columns of oil of vitriol and of mercury supported in the sealed limbs of the tubes by the pressure of the atmosphere in the receiver, will be in the same proportion as the specific gravities of the liquids; that is to say, that mercury being 7.3 times heavier than oil of vitriol, the column of oil of vitriol will be 7.3 times longer than that of the mercury. Thus, when the column of mercury is half an inch, that of the oil of vitriol will be rather more than three and-a-half inches. When, however, the greater part of the air has been extracted from the oil of vitriol, the respective heights of the columns will no longer maintain this relation with any certainty. The oil of vitriol will frequently not fall in the tube *B* until long after the time at which such a result has been indicated by the column of mercury in *C*, and when it does fall, it will be observed that a little bubble of air is formed in some part of the column at the same moment. When the oil of vitriol has been deprived of air, so that air bubbles are no longer formed in it, the receiver may be exhausted to the greatest extent practicable, without effecting any reduction in the column of oil of vitriol. The tube I have used, is thirty-five inches long, and half-an-inch internal diameter, and a column of oil of vitriol of this length, has been supported in the sealed limb of the tube, as shown in the figure, while the column of mercury was less than half-an-inch.

Now, in this case, the pressure of the atmosphere in the receiver, is equivalent only to a column of about three and-a-half inches of oil of vitriol, so that a column of this liquid, thirty-one and-a-half inches high, and half-an-inch in diameter, is supported by the force of adhesion between the liquid and the tube.

Having thus ascertained that the force of adhesion in a liquid is greatly increased when the air is entirely removed from it, Donné devised the following experiment, with the view of determining what the boiling point of the liquid would be under such circumstances.



A tube, *A*, *B*, *C*, containing as much water as will fill the limbs *A*, *B*, to the point *D*, is deprived of air and sealed, in the way usually adopted in making a cryophorus. If the water be made to run into the end of the tube *A*, *B*, and perfect contact between the water and the glass be ensured by gently striking the end *A* on a table, it will be found that the tube may be placed as shown in the figure, without any of the water running out of *B* into *C*. The water is retained in the limb *B* by the force of cohesion and of adhesion; and this will continue to be the case if the tube be placed so that *B* shall be perfectly vertical. If, now, a vessel *E*, containing hot oil be placed as represented, so that the end *A* of the tube shall be immersed in the oil, the water in the tube from *A* to *F* will be heated, without any heat being communicated to the water in the limb *B*, or to the vacuous part of the tube *C*. Donné applied a bath heated to 212° to the tube arranged as described, but no ebullition took place, nor was any vapour formed. He then increased the temperature of the bath to 234°, to 251°, and to 264°, but still there was no appearance of ebullition, or of the formation of vapour. On increasing the temperature to 275°, the water in the end *A* of the tube was suddenly converted into vapour, and the contents of the limb *B* were sent with great violence into the bulbs *C*.

Now, if the water at *A* was really heated in this experiment to 275° before it entered into ebullition, the particles must have been held together by a cohesive force equivalent to the pressure of three atmospheres, or forty-two pounds to the inch; for water boils under this pressure at 275° Fahr.

From these experiments Donné infers that water boils at 212° under the mean pressure of the atmosphere, only when it contains a certain portion of air, the action of the air being to destroy the force of cohesion and of adhesion in the water; and he accounts for those steam-boiler explosions which occur when the heat is at its highest point, by assuming that in these cases the water, by continued boiling, has been entirely deprived of air, and has then assumed a condition similar to that of the water in the last experiment. Ebullition, under such circumstances, does not take place until the water has been heated to a point at which, when the inactivity of the water has been overcome, an immense volume of steam is at once generated. He also ascribes the irregularity and the bumping which occur in the boiling of liquids to the same cause, and has suggested as a remedy in all these cases the passing of a current of air or steam into the boiling liquid.

I have tried this remedy, but have not found it successful.

In the cases which I have hitherto specified, the phenomena, if we admit the explanation given, result from the simultaneous influence of cohesion and adhesion in the liquid. There are some cases, however, in which only one of these forces, namely, cohesion, appears to play any part.

It is a well-known fact, that if a small quantity of water be thrown on to a metallic plate, heated to a temperature approaching dull redness, the water is not, as might have been expected, rapidly dissipated in vapour, but, assuming a somewhat globular form, it remains quiescent, or slightly agitated only by the action of the heat, and sometimes rolling over the surface of the heated plate. It is evident, in this case, that the water is not in contact with the metal, consequently there is no adhesion. Very little evaporation takes place from the water when in this, which has been called the spherical condition. Although in close proximity to a plate of, it might be, red hot metal, the water appears to become heated only to about 205°, and in this condition it remains, undergoing slow evaporation, until the metal becomes so far cooled as to admit of the water coming into contact with it; when this occurs, the water loses its spherical condition, flows over the surface of the still highly heated metal, with which it now is in contact, and it is instantly dissipated in vapour.

A great number of interesting experiments have been made in connection with this subject by M. Boutigny, and on the results have been founded an explanation of that class of boiler explosions which occur *after*, but not *at the moment of*, the excessive heating of the boiler. It is assumed that in these cases the boiler becomes heated to a temperature at which the water is thrown into the spherical condition; while in this state very little steam is generated, but as soon as the boiler has cooled to a point at which contact takes place, the sudden formation of a large volume of steam causes the explosion.

[This effect was illustrated with a small copper boiler heated to redness over a spirit lamp.]

It has been found that other volatile bodies, besides water, are similarly affected under like circumstances. Thus, ether, alcohol, iodine, &c., assume the spherical condition when thrown into a metallic vessel (a platinum crucible for instance) heated to redness. The vaporization of these bodies under such circumstances is comparatively slow, but when the vessel has cooled to the point of contact, there is an immediate augmentation of vapour. This forms a pretty experiment with iodine, the period of contact being indicated by the increased volume of its violet-coloured vapour. M. Boutigny availing himself of the fact that even the most volatile bodies are capable of assuming this spherical condition, has devised a method of freezing water in a red hot crucible. This experiment is performed in the following manner:—Some liquid anhydrous sulphurous acid is first prepared, by passing the dry gas through a tube surrounded with a freezing mixture of ice and salt, and collecting the product in a small tube sealed at one end, also surrounded with a freezing mixture. This liquefied sulphurous acid boils at 14° Fahr., and therefore if it is to be kept for any length of time, the mouth of the tube must be sealed at the blow-pipe flame. A thick platinum crucible having a capacity of about f℥j, is to be heated to redness, and while in this state, about f ʒj of the sulphurous acid is to be rapidly projected out of the tube into the crucible. The acid assumes the spherical condition, and while in this state undergoes comparatively slow evaporation; the lamp is now quickly withdrawn, and a small quantity of water thrown into the crucible with a syringe. The temperature of the crucible is reduced by the introduction of the water, so as to cause the contact, and consequently the instantaneous vaporization, of the sulphurous acid, which, during its evaporation, robs the water of its sensible heat and reduces it to the state of ice.

[A portion of water was frozen in the manner here described.]

Having now explained the nature of the supposed influence of cohesion and adhesion on the boiling and evaporation of liquids, and pointed out some of the cases in which these influences are productive of much inconvenience and annoyance to Chemical and Pharmaceutical operators, I have only in addition to make some allusion to the remedies for these evils. I have already stated that I have not found the remedy proposed by Donné to be successful, at least in some cases in which I have tried it. Other means I have found to be perfectly successful, but I propose making a detailed description of these the subject of a future communication.

The lecturer exhibited an apparatus for distilling small quantities of balsam of copaiba, in testing the purity of that substance, as described in a paper at page 13, vol. vi. of this Journal, an account of which we will give in a future number.

ORIGINAL AND EXTRACTED ARTICLES.

ON THE RESIN OF INDIAN HEMP.

BY MESSRS. T. AND H. SMITH.

The peculiar and marked narcotic action of the Indian hemp resides in a soft neutral resin, soluble in rectified spirit, but insoluble in water or weak spirit, and therefore separable by water from the alcoholic solution in the form of an extremely fine white pulverulent substance, which gives the liquid a milky appearance. The resin very much resembles jalap resin or jalapine, except in remaining soft, even after continued drying, and in giving out a strong aromatic smell on heating, and having a warm, pungent, and balsamic taste. In this character it differs from morphia, which is very bitter. Its chemical nature also is very different, being altogether destitute of basic properties. But in its physiological action on the human body it is exceedingly analogous to opium,* producing powerful narcotic effects in the dose of two-thirds of a grain, as proved by repeated trials on ourselves and others. We consider the above dose at least equal in narcotic power to two grains of opium. It has one great advantage over opium, namely, that it has no constipating effect on the bowels.

We have obtained the above resin from old decayed gunjah, which had lain by us in a neglected state for years. The first was made from the extract received by us from Mr. Robertson. One cause of the irregularity in the effects of the extract as hitherto made has been, without doubt, that water or weak spirit has been used instead of strong rectified spirit in its preparation, in which case the resin would be left in the marc. As a proof of this, on adding to a solution of the resin in strong rectified spirit a fifth of its bulk of water, the resin begins to separate, and before half its bulk has been added all the resin is thrown down.

We observe from Mr. Redwood's remarks, on reading Mr. Robertson's paper on the 8th of July, that he supposes the extract received by Mr. Squire, from India, to have been a portion of that which formed the subject of the paper: this was not the case. From the tenor of Mr. Robertson's letter to us, we are sure that Dr. O'Shaughnessy was not in any way concerned in preparation.

Edinburgh, August 10th, 1846.

ON AMORPHOUS QUININE.

BY MR. T. REDWOOD,

Professor of Pharmacy to the Pharmaceutical Society of Great Britain.

THE announcement which appeared in the *Lancet*, of May the 23rd, and which was copied into the PHARMACEUTICAL JOURNAL for July, of the discovery, by Baron Liebig, that the impure residue of quinine manufactories, commonly called *quinoidine*, contained a portion of quinine in an uncrystallizable or amorphous state, has excited the attention of a large number of Chemists, who considered this fact interesting in a scientific, and likely to be important in a commercial, point of view. The method by which Liebig obtained the amorphous quinine, as described in his paper, consisted in dissolving quinoidine in a dilute mineral acid, precipitating it with ammonia or an alkaline carbonate, and then adding to the liquor an equal volume of ether, in which "the precipitate dissolves, *with the exception of a dark brown residue.* On evaporating the ether, a resinous mass is obtained, having all the properties of an organic alkaloid."

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* There is one striking distinction between the action of Indian hemp and that of opium. One of the most important instructions in cases of poisoning with opium is to rouse the patient, as the effect is increased by a state of repose. The reverse is the case with Indian hemp: as we have been informed by a medical friend, who has tried it in several cases, that the peculiar sensation of giddiness produced by it is increased by walking about, and subsides when the patient is at rest.—ED.

This is the substance which Liebig submitted to analysis; and finding the result to coincide with that of the analysis of ordinary crystallizable quinine, he has concluded that this differs from the other only in being uncrystallizable.

In pointing out the probable importance of this discovery, which presents a new source for a valuable remedial agent, from whence at least a supply might be obtained at a cheap rate for the use of the poor, Liebig states, "It is necessary that the amorphous quinine should be separated from all admixtures and impurities, and prescribed in its pure state." No other method than that above described is given for its purification; but it is stated, that while some specimens of quinoidine were found to consist almost entirely of amorphous quinine, others contained only a small per centage.

It is remarkable that, in describing his experiments, no allusion is made by Liebig to the presence of cinchonine, or crystallizable quinine, in the quinoidine of commerce; nor are we told whether any means were adopted to ensure the absence of these from the product which he submitted to analysis. He states, indeed, incidentally, that Geiger had discovered quinine and cinchonine, accompanied by a resinous substance, in commercial quinoidine, and that this Chemist, as well as Henry and Delondre, considered that the resinous substance impeded the crystallization of the sulphates of the two bases. Now, as cinchonine and crystallizable quinine, as well as Liebig's amorphous quinine, are soluble in ether, it is evident that the method of purification described would be insufficient, if any crystallizable quinine or cinchonine were present in the quinoidine. The difficulty with which quinine crystallizes, and which, on its first discovery, led to the opinion that it was uncrystallizable, makes it the more necessary, in this case, that every precaution should be adopted against submitting to analysis, not one body, but a mixture of two or more bodies.

On repeating the experiments, described by Professor Liebig, for obtaining the substance which he submitted to ultimate analysis, I have found that, if the quinoidine be good, it is sufficient to treat that substance with ether, and evaporate the ethereal solution to dryness. In some cases, however, the quinoidine contains salts of the alkaloids, when it becomes necessary to dissolve and precipitate it, as Liebig directs, before treating it with ether. The product of the evaporation of the ethereal solution is Liebig's amorphous quinine. As thus obtained, it is an amber-coloured, resinous-looking substance, without any crystalline structure. It has a peculiar, somewhat balsamic, smell, and when dissolved, either alone or in combination with an acid, the taste is bitter, but more nauseous than that of a similar solution of crystallized quinine.

I have observed, in the course of my experiments on this substance, that if, instead of evaporating the ethereal solution to dryness, it be submitted to spontaneous evaporation, and then examined under the microscope, it will be found to be thickly studded with crystals. These are of two kinds; the greater part of them are small and acicular (quinine?), but among them are some which are much larger, having the form of a quadrilateral prism with a rhombic base (cinchonine?). If, instead of using commercial ether, the solution be made in ether that has been washed with water, and from which the dissolved water has not been removed by chloride of calcium, the crystallization will take place to a still greater extent. In this case, after exposing the solution to slow spontaneous evaporation in a closet, and then allowing the still soft residue to stand undisturbed for a week or ten days, I have found it to consist of a complete mass of crystals. The same result will ensue if the product of the evaporation of the ethereal solution be dissolved in boiling alcohol, and a little solution of ammonia added to it, a method which has long been adopted for promoting the crystallization of quinine.

The conclusion seems to be obvious, that either the substance which Liebig has described as amorphous quinine is not amorphous, or that it is very easily transformed from the amorphous to the crystallizable condition. It is certain, however, that Liebig's analysis, and the inference founded thereon, relate to that part of quinoidine which is soluble in ether, and not to *the dark brown residue*, which is insoluble, and which when dried has the appearance of pitch. No analysis has been published of this substance, nor have we any authority for assuming that it possesses any of the characters or properties of quinine.

Shortly after the appearance of Liebig's paper it transpired that the preparation of amorphous quinine had been made the subject of a patent, under circumstances which were described in the last number of this journal.

I had not at that time seen a specimen of the *patented amorphous quinine*, but having occasion shortly afterwards to examine some of it, I felt it my duty to send a statement of the result to the two leading medical journals. The following is an extract from my communication, which was headed

AMORPHOUS QUININE.

"I have made an examination of the compound sold under the above title, with the patentee's signature pasted over the cork, and find it to possess the following characters: it is in the form of a dark dirty-brown powder, having somewhat the appearance of powdered extract of jalap. When heated, it agglutinates into a black pitchy mass, and emits a disagreeable smell; it is soluble in rectified spirit; it is soluble also in water, with the addition of a few drops to the grain of diluted sulphuric or some other acid, and the solution thus formed has somewhat the colour of tincture of bark, and a very bitter, rather disagreeable, taste.

"There is a wide difference between this substance and the amorphous quinine made as described by Liebig, and this difference is especially made apparent on treating the patented article with ether. It is well known that quinine is readily soluble in ether, and Liebig states that his amorphous quinine is also soluble in that menstruum, but the patented amorphous quinine is not. On treating this latter with ether, part dissolves, forming an amber-coloured solution, while a large quantity of a black tarry-looking substance remains adhering to the sides of the vessel in which the solution is made. On drying the insoluble part, it forms a hard black mass, like pitch, and this constitutes thirty per cent. of the original powder. If the ethereal solution be submitted to spontaneous evaporation, a great number of crystals will be formed on the sides of the vessel, which present the characters of chinchonine, and the remainder, on being finally dried over a water-bath, assumes the characters of amorphous quinine.

"It is thus evident that the substance sold as amorphous quinine, the preparation of which has been secured by patent, is not that which it purports to be, or that which Liebig has described and recommended through your journal, but is a very impure mixed product, little better than the rough quinoidine from which it is made.

"It is evident, also, that so far from the profession being protected from errors or sophistication by this patent, the opposite effect is produced, the existence of the patent being the only reason why Chemists who would be incapable of offering for sale as "the pure alkaloid of the cinchona bark," a substance containing from thirty to forty per cent. of foreign matter, have not proceeded to manufacture and supply the pure article, and thus, by fair competition, afford the public the best security against imposition."

To this an answer has since appeared in the *Lancet* (in which journal my communication was published) wherein the patentee says,—

"I deny the accuracy of Mr. Redwood's statement *in toto*. That my preparation is entirely soluble in ether, I never asserted; but that thirty per cent. of it is insoluble in that menstruum, is a mistake I can only account for by supposing some inaccuracy in Mr. Redwood's method of weighing or estimating the amount. Professor Liebig remarks, that "it is necessary the amorphous quinine should be separated from all admixtures and impurities, and employed in its pure state;" this remark refers to the subtance known as chinoidine, which, as found in commerce, often sometimes contains only a very minute per centage of amorphous quinine, and sometimes none at all.

"Your readers well know, if Mr. Redwood does not, that many organic substances undergo various transformations or changes when subjected to various processes and influences. They are perfectly familiar with examples of such bodies, having exactly the same constitution and composition, existing under two or more modifications, which are sometimes only distinguishable by the one being soluble in a given menstruum, while the other is insoluble. Will Mr. Redwood have the goodness to publish his analysis of the 'substance' insoluble in ether, and which he asserts is not amorphous quinine? His communication, I think, shows the weakness and backwardness of English pharmacy. It is always seeking some rule of easy application to save trouble and labour. I allege that nothing short of careful,

repeated chemical analysis by the well-known process of combustion, and estimation of its constituent elements, could warrant Mr. Redwood's assertion that my patent preparation contains one per cent. of anything save amorphous quinine."

I have carefully repeated the examination of the patented amorphous quinine, and adhere to my previous statement, that it contains 30 per cent. of matter insoluble in ether. It must be understood, however, that the specimens which I have examined were purchased prior to the 28th of July, the date of my letter to the *Lancet.*

The patentee admits that his preparation is not entirely soluble in ether; but seems to imply that the insoluble as well as the soluble part, is amorphous quinine; and he complains of my having stigmatized the insoluble part as *impurity*, without first making an ultimate analysis of it. I entirely differ from his opinion that analysis by combustion is the only satisfactory way of determining what the pitchy residue is. That mode of proceeding would indeed be "*a rule of easy application*," but it is one which no Chemist would apply, without first ascertaining that the substance to be burnt was a definite compound, in a fixed and definable condition. Is the substance in question one of this description? Had Professor Liebig considered it to be so, he would, no doubt, have analyzed *it*, as well as *his amorphous quinine*. But, as I have already stated, no analysis of this substance has yet been published, nor would it be of any value should any one be guilty of the folly of making it. It would not be difficult to prepare an extract of guano, which, submitted to combustion, would yield precisely the constituents of quinine. The fact is, that the *patented amorphous quinine* has been too much burnt already. It is well known that quinoidine is not produced in any quantity by some of the quinine manufacturers, who understand the secret of avoiding the application of too much heat in the process.

The patentee's preparation is sold under the title of "AMORPHOUS QUININE, *the pure alkaloid of the cinchona bark, in the form in which it has been described by Professor Liebig.*" Of this substance I have stated, and again repeat, that it "*is not that which it purports to be, or that which Liebig has described and recommended, but is a very impure mixed product, little better than the rough quinoidine from which it is made.*" I may now add the following description of it, in which I shall borrow the graphic language of the patentee: It is the product of, probably "*many, organic substances, which, having been subjected to various processes and influences, have undergone various transformations or changes.*"

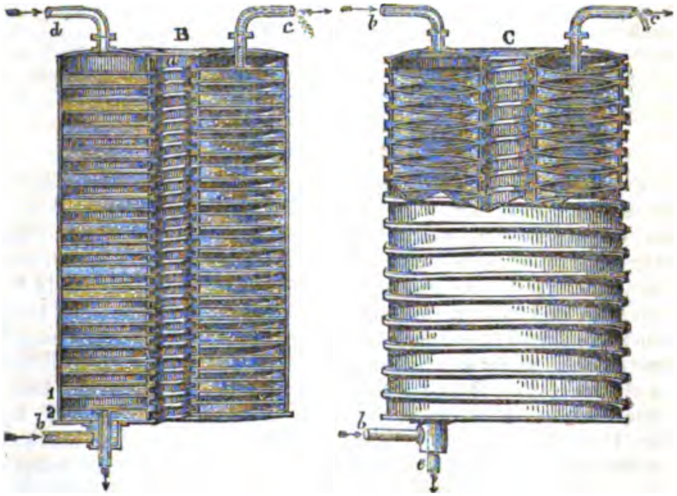
LIQUOR SARZÆ.

Take ten troy ounces Jamaica sarsaparilla, infuse in six pints of water, temp. 120° Fahr., for six hours, strain off the liquor, and add six pints more water, temp. as before, again infuse for six hours, and strain. Evaporate the liquors, temp. 160° Fahr., in porcelain; the product would be from nine to ten fluid drachms of Liquor Sarzæ. T. Herring.

40, Aldersgate Street.

PATENT REFRIGERATOR AND CONDENSER,

For the Brewery, Distillery, Laboratory, and Engine Room, an improved Apparatus for modifying Temperature in the Condensation of Vapours, and in Cooling and Heating of Liquids and Fluids.*



The apparatus consists of circular plates connected together, and so placed as to form an inclined plane contiuued round a cylinder, forming compartments for two fluids to circulate in opposite currents, the one ascending and the other descending. The hottest fluid or vapour commences its course at the top of the instrument, and the coldest first enters at the lowest point of contact, where the discharge of the one operated upon takes place; being separated only by thin plates of metal.

Thus, by each fluid being exposed to the mutual action of the other, the highest in temperature suffers a constant loss of caloric, which is imbibed by the coldest. This natural law of radiation continues to assimilate the temperature of the two fluids, and the one which is becoming cooler still meets with a lower degree of heat. This continual decrease of heat is carried on, until a uniform temperature in both is effected, and the condensed one escapes from the aperture surrounded by the entrance of the extreme coldest fluid.

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* Mr. William Saunders, patentee. Messrs. Dring and Fage, manufacturers, 19 and 20, Tooley Street, London Bridge.

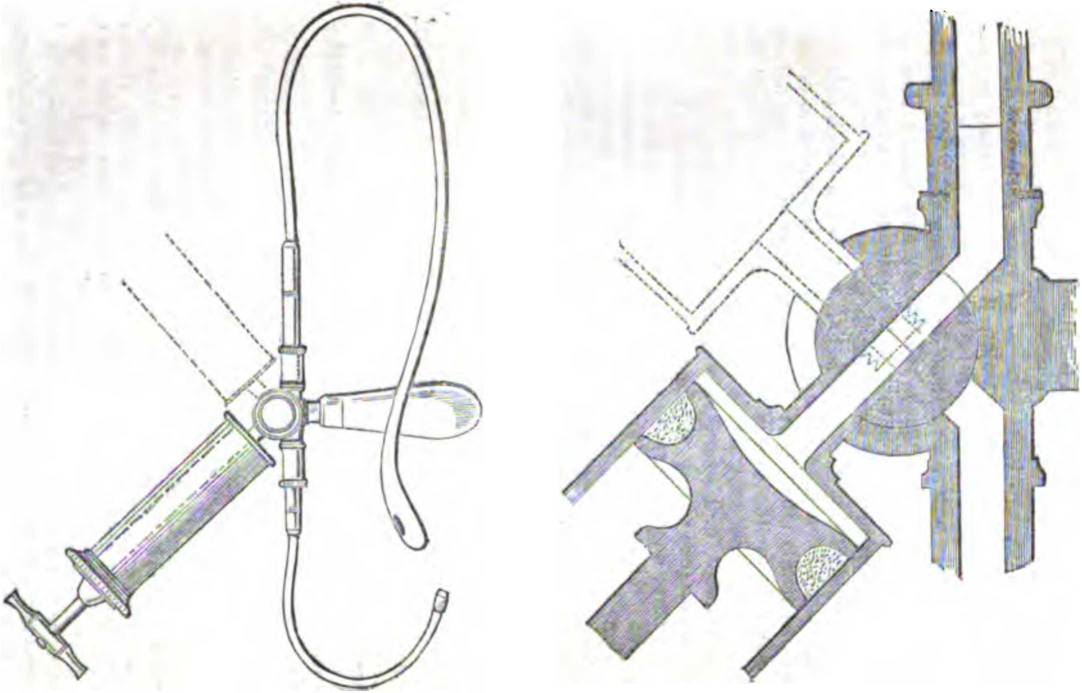
The operation is then completed : the heat which the first fluid held in excess is gradually abstracted by the other ; and during their progress through the instrument, they actually change their respective degrees of temperature, that which was the highest being converted into the lowest.

It will be seen in the drawings of the sections, that the refrigerator is composed of flat plates, and those in the condenser are elliptical.

This condenser, which occupies a very small space, is on this account, a great improvement upon the old-fashioned worm tub, and in principle resembles what is called Liebig's condenser, with this difference, that it is circular, instead of being straight. We are informed by Mr. Drew, in whose laboratory we have seen Saunders's condenser in operation, that in the distillation of oil of cloves and some other articles, it possesses a great advantage, arising from the rapidity and regularity of the condensation, the temperature of the water in the vessel being easily kept uniform by regulating the stream which flows through it. From the construction of the apparatus, the interior cannot be cleansed with so much facility as a common pipe, a circumstance which requires attention in changing the article distilled, so as to avoid any taint from that which was distilled previously. For this purpose, the most effectual plan is to send a current of steam through it for a few minutes, or until all taint is removed.

HORNE'S STOMACH PUMP.

There are no instruments which so much require to be brought to the utmost perfection and simplicity, as those which administer to human relief, particularly when required on any sudden emergencies, and when those most competent to use them are not always at hand. Instruments of this class must not only be free from every complexity, or liability to derangement, but they must be so perfect in themselves, as to enable the inexperienced practitioner, as far as possible, to use them with the same efficacy as the more skilful operator. We consider all this has been completely accomplished by the stomach-pump invented by Mr. Horne, a gentleman already well known to the medical profession and the public by his scarcely less useful and simple invention of the pneumatic safety enema. The stomach-pump which we now particularly recommend to professional notice, is so simple and so admirably contrived that we verily believe that the most inexperienced Assistant could apply it with more safety, and certainty of effect, than a skilful Surgeon could use one on the old principle. The improvement is simply this, that instead of having any cocks to turn, keys to press (at certain times) or valves to open or shut, to form the communication with the basin or stomach, as is the case in those in present use, there is here always a clear and unobstructed passage just under the pump which unites it with the tubes; and thus, by merely moving the pump a quarter of a circle backwards or forwards, as represented by the drawing, a complete and free passage (which cannot become clogged up) is opened alternately with the



HORNE'S STOMACH-PUMP.

stomach and basin at each stroke of the piston. By simply, therefore, pointing the pump in the direction to the object intended to be acted upon (viz. the stomach or basin) no mistake can possibly take place. We need scarcely observe that, if the stomach be required to be relieved of some portion of its contents after every injection of water, it is only necessary to keep the pump in the same position for the next stroke as it must be in to inject the water, and then, by drawing down the handle, the contents of the stomach will follow; and should these be required for analysis, the tube in the basin can in a moment be shifted to another vessel to receive them.

Of all surgical instruments there is not one in which delay in preparing it for use, or derangement of its parts whilst in action, so immediately affect life; for the extremity of sinking nature, which calls for the use of a stomach-pump, imperatively demands a machine that can be applied by any one without a moment's delay, and one that will unerringly perform its duty. The occurrence of any stoppage in a cock or valve of the common pump, may remove the only chance of saving the life of a patient: this can never be the case with the one under notice.

Many human lives would have been saved had there been an instrument of this kind at hand, not merely preserving those who have sought a fearful termination to their sorrows by taking poison, but also the innocent victims of the animosity of others, as well as those who have taken poisonous articles by mistake; events unfortunately of too frequent occurrence.

MAGNESIA IN THE TREATMENT OF POISONING BY ARSENIC.

At the sitting of the French Academy of Sciences, 18th May, M. Bussy presented a note on the use of magnesia in poisoning by arsenic. The results of his paper are as follows:

1. That purified animal charcoal, recently proposed against poisoning by arsenious acid, cannot be employed successfully for that purpose.
2. That magnesia, in a state of purity, but not strongly calcined, readily absorbs arsenious acid in solution, and forms with it a compound insoluble even in boiling water.
3. That in the gelatinous state it still more readily absorbs the poison.
4. That animals which have been forced to swallow arsenic, uniformly escape when made to take a sufficient quantity of magnesia.
5. That this antidote has, over every other known or in use, the advantage of being found at hand in all the shops; that it readily and completely neutralises the poison; that it can be given in large quantity without inconvenience; and that its general effects on the system coincide with the indications of treatment to be fulfilled under the operation of the poison.
6. That magnesia decomposes emetic tartar, the salts of copper, corrosive sublimate, and that there is reason to believe it might be successfully employed to counteract and destroy the effects of these poisonous substances, and of metallic salts in general.
7. That the salts of the organic alkalies, morphia, strychnia, &c., being also decomposed by magnesia, the use of that substance, in the case of

poisoning with organic products, owing their activity to the presence of vegetable alkalies, might be the means of impeding and retarding the absorption of the poison. This conjecture the author reserves for verification by farther trials."—*Gazette Médicale de Paris*, 23d Mai, 1846.

OBSERVATIONS ON MAGNESIA AS AN ANTIDOTE TO ARSENIC.

BY DR. CHRISTISON.

Dr. Christison's attention was lately turned to this subject by a case of poisoning with arsenic having come under his notice, in which magnesia seemed to prove very serviceable. Immediately afterwards, he observed it announced in a French scientific newspaper, *L'Institut*, Mai 20, that a paper had been read before the French Institute, two days before, by M. Bussy, to prove, "That magnesia, not strongly calcined, removes arsenic entirely from a state of solution in water: That this is effected still more completely by magnesia in the gelatinous state; and that animals which have taken arsenic are invariably saved if made to swallow magnesia." While waiting for the details of Mons. Bussy's inquiries, Dr. Christison made a few experiments to ascertain the amount of the action of magnesia; and he found that the dense magnesia of the shops exerts very little action in removing arsenic from solution in water; that a very light magnesia, now largely manufactured at Belfast, and quite free of carbonic acid, will remove about a twenty-fifth of its weight of arsenic from solution in water, when agitated with the solution for a few minutes, so that even ammoniacal nitrate of silver does not any longer indicate the presence of arsenic; that the same magnesia will remove about a twelfth of its weight of arsenic if agitated occasionally for a period of eight or twelve hours; that this proportion is removed entirely in less than three minutes if the mixture of magnesia and water be previously near the temperature of 212°; and that the same proportion is removed with as much speed at ordinary temperatures, if the magnesia be used in the form of gelatinous pulp, as thrown down in a cold solution of sulphate of magnesia by solution of caustic potash, and washed with cold water.

It is well known that magnesia was proposed many years ago by Mr. Hume, of London, as an antidote for arsenic, and that several cases have been published in which it appeared to have been of service; but that its general utility has been doubted or denied on account of the apparent want of chemical action between oxide of arsenic and magnesia. Mons. Bussy's inquiries will probably clear up these difficulties. Meanwhile, it appears probable, from the experiments described above, that the general belief in the want of action between magnesia and oxide of arsenic has arisen from the circumstance that, for a long time, no other magnesia has been in current use in medical practice in Britain, except the dense variety, which appears to exert very little action on arsenic in solution, on account of its great density.

Dr. Christison promised more accurate experiments, and a statement of the successful case hereafter. Meanwhile it appears advisable that, when magnesia is used as an antidote, and cannot be promptly obtained in the gelatinous state, the light calcined magnesia should alone be employed, and in the proportion of between thirty and fifty parts to one of arsenic.—*Monthly Journal of Medical Science*, August, 1846.

ON PIGMENTS.

BY DR. J. A. STOECKHARDT.

(*Continued from page* 86.)

GREEN PIGMENTS.

IX. Copper Green.

A. Hydrated oxide of Copper mixed with light white substances goes by the names of *Bremer green* or *Bremer blue*. It is obtained by decomposing a salt of copper by a solution of caustic potash or soda, and then mixing the precipitate with fine washed gypsum pulp. When carefully dried the pigment is obtained in light blue, or greenish blue, very loose and light pieces, which with size or lime yield a light blue, and with varnish a nice green, very durable pigment. By long exposure to a damp air the pieces become coated by a firm crust of an intense blue colour, similar to ultramarine. It is not very much in use, and only a few sorts are met with. Price from 15 to 20 gr. per lb.

B. Basic carbonate of copper mixed with heavy white substances is known in trade by the names of *Brunswick green*, which is for the most part in the form of compact tabular pieces; and of *Mountain green*, which is in crumbling grains or in a pulverulent form. Before the arsenical copper pigments were known, both pigments were in great repute; but now they are little used. They were prepared either by washing ground malachite, or by decomposing a salt of copper, especially the basic chloride of copper, by quicklime, chalk, tartar, &c.; at present arsenical green is often added to them, in order to make their tint more lively. In most cases, therefore, copper colours containing arsenic are to be understood under the names of *Brunswick* and *Mountain green*. The pigments of this sort, free from arsenic, which are still used, are very indifferent. There are very few sorts, and the price of the first is from 8 to 15 gr., of the second from 3 to 10 gr. per lb.

C. Acetate of copper is known as follows:—The *basic combination* by the name of *verdigris*. It forms a bluish green, solid, earthy, granular, often crystalline, mass, in which husks and stones of grapes are frequently found (*French verdigris*); or is of an almost grass-green colour, with a greater proportion of acetic acid (*German* or *English verdigris*). The first is prepared from plates of copper, which are placed in contact with husks of grapes in a state of acid fermentation. In order to obtain the latter, the copperplates are piled up between layers of flannel impregnated with strong vinegar. Verdigris is used both as a water and an oil-colour; and as it dissolves in turpentine when boiled in this oil, it is also employed to stain wood of a green colour: as for the little wooden trees which are so admired as toys. No great variety of sorts exist. The price is from 36 to 40 dollars per cwt.

D. The *neutral combination*, which is called *crystallized* or *distilled verdigris*, consists of intense bluish-green crystals, which after having been kept for some time became covered with a light green powder. It is obtained by dissolving common verdigris in vinegar and crystallizing.

X. Arsenical Copper Green.

A. Arsenite of copper is called *mineral green* and also *Scheele's green*. It is prepared by dissolving white arsenic in caustic potash liquor, and decomposing the arsenite of potash thus obtained by sulphate of copper. The precipitate, when dried, forms irregular rather hard pieces of a dark green colour; light green on the surface. This green possesses a greater brilliancy than the above-mentioned green copper pigments; and was, therefore, for many years used as an oil and lime-colour, but has now been almost entirely superseded by the more beautiful Schweinfurt green. As it cannot be mixed with white substances without losing something of its brilliancy, there are but few sorts of it. The price is from 15 to 20 gr. per lb.

B. Arsenite and acetate of copper exists in two forms; viz., as a *crystalline*, and as an *amorphous* powder: the latter mixed with white substances in numberless shades.

Schweinfurt green may serve as a type of the former; and *English green* of the latter. The following is a list of the different shades of this beautiful pigment, of which the manufactory where it was invented, produces alone about fifty sorts from 5 to 25 gr. per lb; they are arranged according to the price:

Schweinfurt, original, patent, Emperor's, Kassel, Paris, Vienna, Leipzic, Würtzburg, Swiss, Jasnügg, English, parrot, Cahlaer, Löbschütz, Mitis, new, Pickel, Munich, Swedish, certain sorts of *mountain* and *Brunswick, May, moss, beautiful, Neuwied*, and *Grundor green;* also, *King's, Kurrer's, Kirchberg, Schober, Zwickau, Brixner, Eisleben, Basle-green*, &c. &c.

Gypsum and heavy spar, and also sulphate of lead, are chiefly used to produce the different shades; chrome yellow for those inclining to yellow, as the parrot, Basle, Kassel, and sometimes Neuwied-green. The pigment is produced by mixing a concentrated solution of crystallized verdigris with white arsenic, by which an olive green precipitate is immediately formed of arsenite of copper, which at a boiling heat is changed to a fine crystallized powder of a brilliant green colour; or by forming Scheele's green from arsenite of potash and sulphate of copper, and changing this into Schweinfurt green by boiling it with vinegar. The more slowly the process of cooling the fluid goes on, and the slower the precipitation of this double salt in consequence takes place, the greater and the more brilliant will be the small crystalline granules. By cooling it quicker, and also by pulverizing the Schweinfurt green, the more pale-green pulverulent English green is obtained. The first does not cover so well as the latter on account of its crystalline nature; but is possessed of greater brilliancy. Both articles are used as oil, water, and lime-colours, and form at present the chief representatives of green pigments. One Saxon manufactory known to me alone produces at the present time 30,000 lbs. of Schweinfurt green per annum. The proportion of the combined arsenious acid varies in the different sorts from 15 to 75 per cent. But most of them contain in addition varying proportions of it in a free state, which can easily be extracted by digestion with water.

XI. MIXTURES OF PRUSSIAN BLUE AND CHROME YELLOW are sold as *green cinnabar, oil green, Neapolitan, Foliage (Laub), chrome, beautiful (Schön), covering (Deck), mignionette, myrtle,* and *American green.* This colour is much inferior to the former, but is still much in use on account of its cheapness and covering quality, chiefly as an oil-colour. It is manufactured in about fourteen shades in the form of powder, from the brightest yellow-green to the deepest blueish-green. The price is from 3 to 12 gr. per lb. It is used both for oil and water painting; but it cannot be used as lime-colour, since both the Prussian-blue and the chrome-yellow are decomposed by lime.

Oxyde of chrome is also often called *chrome green*, but is only used as an enamel colour.

Barth's green is a mixture of Prussian blue and yellow lake (*Schuttgelb*), but does not form an article of trade.

XII. IRON GREEN, *silicate* and *phosphate of the protoxyde of iron*, exclusively a natural product, is met with in commerce under the names of *Green-earth*; *Cyprian, Tyrolese, Bohemian*, and *Veronese green-earth;* and *Veronese*, or *French stone-green.* Iron green belongs to the so-called earth colours, and is sold either in a crude state, or in the form of irregular dark leek or olive-green pieces which have been purified by washing. It serves both as a water and oil colour, and is particularly good as a lime or house pigment. There are only a few sorts of it, and their price is from four to fifteen dollars per cwt.

XIII. Vegetable Green.—It is obtained from the extract of buckthorn berries; and mixed with alum, is sold under the names of *sap-green*, *sea-bladder*, *buckthorn berry*, or *chemical green*. Buckthorn berries are allowed to ferment, and the juice then pressed out, mixed with alum, and evaporated over a slow fire to the consistency of an extract. The product when cold is somewhat thick, tough, and of a dark green colour. It has a shiny fracture; and is usually preserved in pig's bladders. It serves only as a water and transparent colour. From 10 to 15 gr. per lb.

The vegetable kingdom does not furnish another durable green. *Chlorophylle*, or *leaf-green*, whose immense variety excites us to rapturous admiration with every new Spring, is so changeable that it loses its beauty by the mere influence of light and air.

OBSOLETE GREEN PIGMENTS.

Mineral green was formerly a combination of carbonate of copper; but the term is now exclusively applied to arsenite of copper.

Berlin green (changed Prussian blue) was an indifferent green powder, which was obtained by applying caustic potash liquor to several sorts of Prussian blue.

Mixtures of hydrated oxide of copper with chloride of copper, *sal ammoniac*, *phosphate* and *tartrate of copper*, were formerly used as mineral pigments by the names of *Friesisch*, *English mountain*, and *Brunswick green*, and *green ultramarine*. Under the name of *green ultramarine* there has been recently introduced into commerce a pigment having a composition analogous to lapis-lazuli blue, which being a very harmless covering pigment, would become very important, if it were possible to manufacture it at a cheaper price, and in more lively hues. Also the *oxide of cobalt*, or *arseniate of cobalt*, with *oxide of zinc*, constituting the *cobalt*, *Gillert's*, or *Riemann's green*, which sometimes goes by the name of *ultramarine green*, but is only used in porcelain or glass painting.

For dying and printing there is no natural green pigment known, if we except the recently invented *arseniate of oxide of chrome*, that could be fixed on the fabrics or used as mineral colour. This colour, therefore, must always be composed of blue (*indigo*, *Paris blue*, or *logwood*) and yellow (*chrome yellow*, *yellow berries*, *quercitron*, *indigo yellow*, obtained by applying nitric acid to indigo).

For some time the *arsenite and carbonate of copper* have been used for producing the so-called *metal*, *copper*, or *poison green*; but the pigment adhered, on account of its little affinity to the fibre, only mechanically and fell off as easily as dust; and the further use of it was, therefore, prohibited by the authorities. Wood and ivory are equally dyed green by mixtures of blue and yellow.

For *paper-staining* there are used as light green almost exclusively *Schweinfurt* and *English green*; but for dark shades mixtures of *vegetable yellow* and *Prussian blue* (seldom indigo). Greenish blue coatings are obtained by *Bremer green* or *Bremer blue*; green for flower papers by *sap green* with *indigo*.

For *colouring and painting sweetmeats*, &c., the following are applicable: *Sap green*, *spinach*, and *coffee green*; and mixtures of *indigo*, *blue carmine*, or *Paris blue*, with *vegetable yellow*, *e. g.* yellow berries, turmeric, and saffron. For *colouring liqueurs*, neutralized solution of indigo, with safflower, yellow berries, turmeric or saffron, and the chlorophylle of innocuous plants.

In *enamel painting*, the following substances are used for producing green: *oxide of chrome*, *oxide of copper* (copperash), *mountain blue*, *protoxide of iron*, and combinations of *uranium*, and also mixtures of blue and yellow.

(*To be continued.*)

THE RISE AND PROGRESS OF A PHILOSOPHER.

We have before us a little book, entitled "*The Family Medicine Book*, being a catalogue of family medicines, drugs, chemicals, patent medicines, &c., with explanations of their use in the cure of diseases, and the prices and doses affixed." The book is, in fact, a cheap Druggist's price-list, published by two brothers residing in a corner-house at the west end of London, Brother John styling himself "Surgeon, &c.," giving advice gratis, and having his name on the door in one street; Brother Thomas, "Chemist, &c.," having a shop-front in the other street. A few extracts from the work may be amusing:—

Universal Embrocation.—Rubbed on the skin, cures rheumatism, spasms, bruises, and stiffness of the joints; applied along the spine and chest, it cures hooping-cough, In bottles, 1*s.* 1½*d.* and 2*s.* 9*d.*

Syrup of Dulcamara.—This vegetable preparation cures all skin diseases, eruptions, scrofula, and other humours; is pleasant to the taste, and in its effects. Pints 10*s.*, half-pints, 5*s.*

Effluvium.—A certain cure for hoarseness, obstinate coughs, and difficulty of breathing. In bottles, 1*s.* 1½*d.*

Portable Champaign.—This is a delicious summer drink, resembling champaign. It will keep any length of time, and is not injured by being uncorked, producing the same exhilirating and cooling effects. A half-pint bottle is equal to two bottles of champaign. Bottles 2*s.* 6*d.* and 4*s.* 6*d.*

Wine of Meadow Saffron.—A tablespoonful every night cures the gout!!

Syrup of Poppies.—To procure sleep; to relieve coughs and colds; usually given to children. 2*d.* an ounce.

Calomel.—Dose, 3 to 10 grains. Opening against Bile, Fever, &c. (kept in pills).

Pills of every description, from 1½*d.* to 4*d.* a dozen. Half-pint mixtures, 1*s.*; draughts, 6*d.* Midwifery fee, £1 1*s.* Suspensory bandages on a new and improved principle, 2*s.* 6*d.* each.

This little book was in extensive circulation a few years ago. Subsequently, brother John changed his residence, and wrote another little book, which found its way to one of the Universities in Germany, and "quite unexpectedly," the author received a diploma, dubbing him a Doctor, under which title he now flourishes. The little book being rather more theological than medical, would seem to entitle the author quite as much to the rank of D. D. as to that of M. D.

In process of time, the Doctor became a very important man, and by his tact and perseverance acquired the entire confidence of the noblemen and gentlemen who compose the Council of the Royal College of Chemistry. The climax of his good fortune arrived, he found himself, as he imagined, sole proprietor of a valuable property, on which the Council was about to erect a laboratory, under Royal patronage, which edifice would be under his supreme control. Unfortunately, however, the Council objected to this arrangement, as will appear from the following statement of facts:—

ROYAL COLLEGE OF CHEMISTRY.

Some consternation has recently been excited among the members of this Institution by the extraordinary conduct of the Secretary, who appears to have availed himself of the power he possessed in the management, so far as to place his own name on the lease recently granted to the College. This was not all. It was arranged that three parties should sign the lease on behalf of the College. The Secretary having in his official capacity obtained possession of the document, signed it himself in due form, and obtained the other two signatures, which latter were not legally attested, the Secretary himself, a paid officer of the College, being the witness.

At a meeting of the Council shortly afterwards the lease was duly examined, and surprise was expressed that the name of the Secretary was inserted, a circumstance highly objectionable on principle, as the result proved.

The Secretary being called upon to give up possession of the lease, bid defiance to the Council, declaring that according to law he alone had power over it, and that the Council were in fact building a house on his property. We understand that several special meetings of the Council were held, and it was only by threatening to bring an action, and by resorting to other summary measures, that possession of the property was obtained.

As the Council have not the power to dismiss the Secretary, who was appointed by the body at large, he has been suspended from his office until the General Meeting, convened for Monday, the 31st of August.

NOTICES OF BOOKS RECEIVED.

QUELLEN-LITERATUR DER THEORETISCA ORGANISCH CHEMIE; *oder Verzeichness der vom Anfang des letzten Viertheils des vorigen Jahrhunderts bis zum Schluss des Jahres 1844 ausgeführten chemischen Untersuchungen über die Eigenschaften und die Constitution der organischen Substanzen, ihrer Verbindungen und Zersetzung sproducte. Mit steter Berücksichtigung der Literatur der Chemie in ihrer Anwendung auf Agricultur, Physiologie, und Pathologie, aus den wichtigeren deutschen und franzöischen Zeitschriften der Chemie und Pharmacie gesammelt, in systematische Ordnung zusammengestellt und mit ausführlichen Sach—und Namenregistern versehen.* Von. E. T. WOLFF, PH. D. Halle: 1845. 8vo, pp. 807.*

THE very extended title which the author has given to this book fully explains the nature and objects of his work. It is in fact a very complete and classified catalogue of all books and papers which have been published during a period of nearly seventy years on all subjects appertaining to Organic Chemistry. As far as we have hitherto had occasion to use it we have found it exceedingly accurate. It is a book the want of which must have been felt by most scientific and reading Chemists.

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* [*Literature of Theoretical Organic Chemistry*; or, Catalogue of the Chemical Researches on the Properties and Constitution of Organic Substances, their Combinations and Products of Decomposition, made between the year 1775, and the close of the year 1844. Compiled, with constant reference to the Literature of Chemistry in its application to Agriculture, Physiology, and Pathology, from the more important German and French Chemical and Pharmaceutical Periodicals, and arranged in systematic Order; to which are added, complete Indices of Names and Subjects.]

The Philosophy of Life, Health, and Disease: *New and Original Views explanatory of the Nature, Causes, and Connexion, and of the Treatment of Disease, upon a few general principles, based upon the Law of Nature and Common Sense; with Rules for the Preservation of Health and Renovation of the System.* By **Charles Searle**, M.D., M.R.C.S.E., *and late of the E.I.C. Madras Establishment.* London: John Churchill, Princes Street, Soho. Edinburgh: Maclachlan and Co. Dublin: Francis and Co. 8vo. pp. 266.

The subject of the above work is too medical to admit of more than a general notice in this journal. The work commences with observations on life, and on the temperature and functions of the body. The author proceeds to consider the influence of air, diet, and other circumstances, on health and disease. A variety of disorders are considered, with the principles on which treatment should be based. The rules laid down, have in some respects, the merit of originality, and, as far as we can form an opinion on a subject not strictly within our province, appear to be in accordance with common sense.

TO CORRESPONDENTS.

The Patent Medicine Licence.—Our readers are reminded that the patent medicine licence expires at the end of this month, and must be renewed on the first of September.

"**An Apprentice.**"—Liquor arsenicalis, or liquor potassæ arsenitis, is not unfrequently prescribed under the name of Liquor Fowlerii, when the physician finds it requisite to conceal from a nervous patient the fact that the medicine contains arsenic. Every Chemist ought to be aware of this circumstance.

"**Omega.**"—**Storm Glass.**—See vol. ii. page 777.

A. B C.—Concentrated compound infusion of roses is liable to gelatinize if spirit be used, on account of the pectin it contains.

"**Clio.**"—(1.) The figures in the Diploma represent two ancient Chemists. —(2.) For killing flies, use a strong decoction of quassia, sweetened with brown sugar.

A. B. C. would save 1*s.* 6*d.* a year by becoming a "registered apprentice."

"**A Young Student.**"—(1.) Sulphur.—(2.) *Lindley's Elements of Botany.* —(3.) It is a medical question.

A. D. B. P.—A knowledge of equivalent numbers is essential in the study of Chemistry. A candidate for the Major Examination, should understand the laws and principles of chemical science—should be well acquainted practically and theoretically with the Pharmacopœia and Materia Medica—should have a general knowledge of Medical Botany and of Toxicology.

J. N. D. (Leeds).—No Act of Parliament is ever likely to pass, which would interfere unjustly with persons already in business. The subject was fully explained in our number for June.

A.P.S. (Birkenhead).—It is not our business to lay down a rule on the subject.

"**Galen.**"—A Druggist after having served his apprenticeship, may walk the hospitals, and become a Surgeon; but could not legally practise as an Apothecary, unless he had been apprenticed to an Apothecary.

H. P. B.—Iodide of zinc is made in the same way as iodide of iron, substituting zinc for iron.

Mr. **Edwards** and Mr. **Boyce.**—The communications will receive attention.

J. W.—The originator of Godfrey's Cordial had no connection whatever with the house alluded to.

"**Alembicus.**"—We cannot tell what is meant by Scammonine: the term would be incorrectly applied to resin of scammony. A substance, supposed to be an alkaloid, has been said to exist in scammony, to which the term *convolvuline* has been applied: probably the term *scammonine* might be used with equal propriety, but such a substance is not, that we are aware of, known in commerce, nor has any satisfactory account of it been published.

"**Ginger.**"—The following is the method of preparing "*Oil of Bricks*:" heat bricks red-hot, and quench them in olive oil; when they have imbibed the oil as much as they will, break them into small pieces, put them into a retort, and distil with the heat of a sand-bath. The oil which passes over, is to be separated and preserved.

"**Illustratio.**"—(1.) We know of none.—(2.) Blaine's *Veterinary Medicine.*—(3.) We have had no opportunity of observing an instance of the chemical action alluded to.—(4.) Sulphuretted hydrogen.

E. I. G.—There is no satisfactory method.

J. F.—Formulæ for "freezing mixtures" are given in Thomson's *Dispensatory* and many other books of that class.

A. P. S.—(1.) We do not know the composition alluded to.—(2.) Rennet is the pickled stomachs of calves.

Amorphous Quinine.—We are authorized to state that the Editor of the *Lancet* has no interest in the patent.

W. D. D.—We reserve the specimen for a future occasion.

"**Scrutator.**"—We have received the communication.

W. O. C. — There is at present no English translation of Gmelin's *Handbuch der Chemie.* The second edition of the second part of the work (namely, "Organic Chemistry") is not yet published.

The case of the Medical Errand Boy is deferred.

Patents for discoveries in Chemistry and Pharmacy.—It must not be supposed from the remarks in our last number that we object to the practice of taking out patents for scientific discoveries. Every man is entitled to enjoy the rewards of his industry and talent. Our criticism had reference to the peculiar manner in which the transaction alluded to was conducted.

Captain White's Currie Power and Paste.—We beg to acknowledge the receipt of the samples.

Advertisements to Mr. Churchill, Princes Street, Soho.

Other Communications to The Editor, 338, Oxford Street, before the 20th of the month.

THE PHARMACEUTICAL JOURNAL.

VOL. VI.—No. IV.—OCTOBER 1st, 1846.

THE SPIRIT LICENCE AND DUTIES ACT.

This Act having now come into operation, and regulations for carrying it into effect having been issued by the Board of Excise, and placed in the hands of the officers in their respective districts, it becomes necessary for all persons using stills to make application for the licence, or in cases where exemption is desired, to state the grounds on which it is claimed. We trust that our brethren in general will afford every facility to the officers for obtaining the needful information, and use all their endeavours to assist the Government in checking illicit distillation.

The following letter evinces a desire on the part of the Government to administer the law with as little severity and inconvenience as possible to Chemists and Druggists. After this assurance it is not likely that another Bill will be brought forward without ample time and opportunity being allowed to our body for considering its provisions. It is therefore incumbent upon us not to dismiss the subject from our minds, but to be prepared to meet any emergency which may occur, and to prove ourselves worthy of the confidence of the Government.

"DOWNING STREET,
"*September* 3, 1846.

"Sir,—I am instructed by the Chancellor of the Exchequer to return you his thanks for your attention in sending him copies of the Pharmaceutical Journal, containing accounts of the proceedings in reference to the Spirit Licence and Duties Bill. The statement of what passed at the interviews of the deputations from the Trade with the Chancellor of the Exchequer is perfectly accurate, and he is impressed with the fairness with which the whole question is reviewed in the 'Observations on the result of the Opposition.'

"The only object which the Government has in view is to prevent illicit distillation, and to frame the measures necessary for that purpose in such a manner as to impose as little inconvenience as possible on the trade of which you are a member. The fair dealer is equally concerned with the Government in promoting this object, and the Chancellor of the Exchequer is sure that he may rely on the concurrence and assistance of the respectable members of the trade in framing any further measures which may hereafter be found necessary to prevent the frauds, on account of which the Bill in question was introduced.

"I am, Sir,
"Your obedient servant,

"JACOB BELL, ESQ. GEORGE ARBUTHNOT."

This letter was, of course, duly acknowledged, with the assurance on behalf of the PHARMACEUTICAL SOCIETY that such assistance would be gladly afforded in the event of any further measures being found necessary.

Having received inquiries from many Chemists in reference to the interpretation of the present Act, and the course to be adopted in complying with its provisions, we have made diligent inquiry on the subject, and have obtained a copy of the regulations of the Board of Excise, which will give a general answer to our Correspondents.

GENERAL ORDER.

EXCISE OFFICE,
LONDON. *4th September*, 1846.

THE Board having had under consideration the Act of 9 and 10 Vic., chap. 90, "To prevent the use of Stills by unlicensed persons,"

ORDERED,

That the attention of the several officers of this Revenue be called to the said Act; that they see that every person keeping or using any Still or Retort for the manufacture of Spirit Mixtures, or preparations made from or with Spirits, immediately take out a Licence agreeably to the Act; and that, also, such Licence be, from time to time, duly renewed:

That the respective officers insert a List of the Persons so licensed in the front of their Survey Book; and that the sums received for the Licences be entered and brought to account in the same manner as is done in respect of other Licences:

That in case of any person requiring to keep or use a Still or Stills for experiments in Chemistry, or for the manufacture of any articles other than Spirits or Spirit Mixtures, and not being desirous of taking out a Licence, the full particulars of every such case be stated to the Board for the purpose of obtaining directions thereon; and that such persons as keep or use Retorts only of less content than two gallons, be not required to take out a Licence.

The several officers are hereby specially enjoined not, in any way, directly or indirectly, to interfere with any person using or keeping any Still or Retort, except for the manufacture of Spirit Mixtures, or preparations made from or with Spirits, or for illicit practices; in every instance, not connected with illicit practices, to exercise the utmost forbearance; and in any case of doubt, to report the same to the Board for special directions.

A Form of Licence having been prepared and printed by order of the Board, such supply thereof, as may be required, can be had by application from the Collectors to the Storekeeper at this Office, in the usual manner.

The directions contained in this Order are not to alter the existing practice in Scotland or Ireland. And it is to be observed, that the Act does not require that entry of the premises be made, or that the name of the party be written up over the premises; and that it does not confer any right of survey or inspection.

By the Board,
GEO. BALLARD

It must be understood that this General Order is not addressed to Chemists and Druggists, but is intended for the guidance of the officers of Excise. It is, however, equally important to those to whom the law applies, as it is impossible to act up to the spirit and letter of any law, unless its requirements are clearly defined. Our readers will perceive that the regulations of the Board are quite satisfactory, being more lenient than the Act itself. The exemption of retorts of less content than two gallons will enable retail Chemists to distil their preparations on a small scale without taking out a licence, and the other regulations are equally considerate.

We hope that, by a proper administration of the Act, aided by vigilance on the part of the Excise officers, the illicit distillation of medicinal spirits will be to a great extent prevented. We have no doubt that this will be the case in those establishments in which it has been the practice to manufacture oxalic acid and sweet spirit of nitre, selling both these articles at a price below that at which they can be honestly made. The wholesome interference of Excise officers in cases of this kind will confer a benefit on honest traders, by exposing the character of the manufactory in such a way as to increase the difficulty of evading the law.

The explanation hitherto given of the low price charged for the articles has been that it is done by a system of barter, by which the loss on one commodity is compensated by the profit on another. But we are not told how this barter is managed, or whether all the molasses taken into the establishment for making oxalic acid are actually used for that purpose.

The mysterious compact existing between these two products is so far understood, that when the inquiry is made whether there is much illicit spirit of nitre in the market, it is not an uncommon answer that some parties are pushing the sale of oxalic acid at a very low price. This reply is as explicit as an allusion to the barometer when inquiry is made respecting the state of the weather.

That the complaints of the Board of Excise have not been without foundation is sufficiently obvious from the sales on the 25th and 26th of September, of goods recently seized; among which, are 5908 lbs. of sweet spirit of nitre, 202 lbs. of spirit of sal-volatile, 389 lbs. of nitric acid, 709 lbs of sulphuric acid, 400 gallons of strong plain spirits, 170 gallons of spirit of wine, 4610 lbs. of molasses, &c. &c.

We are inclined to believe, however, that the number of offenders is not so large as some persons imagine; but that the bulk of the frauds are committed by a few dishonest persons whose plans are so artfully arranged that they carry on the game to a wholesale extent. We have heard much stress laid on the

1500 invoices of illicit spirit recently collected in the north of England, but it must not be forgotten that all these invoices emanated from one distillery.

On this subject we have received a letter from a Correspondent, to which we call the attention of our readers.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

DEAR SIR,—I observe that when the deputation respecting the Spirit Licence and Duties Bill waited upon the Chancellor of the Exchequer, the Hon. the Chairman of the Board of Excise stated, that he "was in a condition to prove that illicit spirit was sold to a great extent in the North of England, and that during a journey of ten days therein, 1500 invoices of spirit from an illicit distillery had recently been collected." In the name of the Druggists of the north of England, I take upon me to thank the gentleman who "expressed a doubt whether in the case alluded to, the parties purchasing the spirit were aware that it was illicit." I beg to inform you, that the distillery alluded to, had been established in this town many years, *under the superintendence of the Excise*, but eluding their vigilance, manufactured and sold quantities of spirit, sending no permit certainly, but charging the *duty paid* and *market price* of the article. I will venture to assert that not one of the Druggists here *had any knowledge* of this fraud, in proof of which I need only mention, that NOT ONE PROSECUTION FOLLOWED upon the collection of these 1500 INVOICES. May I beg the insertion of this refutation of an apparent, but I hope, unintentional, calumny of the Druggists of the north of England.

I am, dear Sir, faithfully yours,

E. WILSON CHALLONER, M.P.S.

Newcastle, Sept. 15th, 1846.

APOLOGY TO DR. GARDNER.

WE briefly adverted in our last number to the qualifications and conduct of the late Secretary of the Royal College of Chemistry, mentioning in a cursory manner, a recent occurrence as reported to us by several members of the College. Desiring not to interfere with the character of the Secretary in his private capacity, we purposely avoided even mentioning his name, in order that the article might only attract the notice of the parties for whom it was intended, namely, the members of the College, and those who take an interest in the prosperity of that Institution.

Dr. Gardner having thought proper to threaten the Editor and Publisher of this Journal with indictments for the publication of a statement which he designates, through his solicitor, as "aggravated, malicious, calumnious, and false," we have been under the necessity of investigating the circumstances of the case, in order to be prepared for making the needful defence. During this investigation, we have discovered that a trifling inaccuracy exists in some parts of our statement, which we take this opportunity of correcting by an amended narrative derived from sources, the authenticity of which is indisputable.

We are told that we were in error in stating that the Secretary considered himself "sole proprietor" of the property. Some other term might have been more appropriate. We understand that the lease was not (as we stated) examined by the Council, and for a good reason, namely, the Council were not in possession of it. "An action" was not threatened in direct terms, but was merely implied in the remonstrance used to induce the Secretary to deliver up the lease without obliging the Council to resort to extreme measures. The Secretary was not the witness, the lease not having been attested at all. We regret the occurrence of these inaccuracies and others of a technical description, although quite unimportant as affecting the general merits of the case, as will be seen by the amended account which is subjoined.

But the whole statement having been designated as "FALSE," we must review it from the commencement. The publication of the little book with the list of medicines, is denied. We have ascertained that Dr. Gardner placed the manuscript in the hands of the printer, superintended the printing, paid the printer's bill, and resided in the house from which the book was issued. His professional advertisement occupies one page of the cover, the title-page being in the name of "T. Gardner, Chemist." The doctor considers it a libel to be accused of publishing that which he caused to be printed, and to which he gave his sanction. We doubt whether a jury would recognize the distinction.

Our information that the degree of M.D. was conferred in consequence of the other little book, was derived from a source the authenticity of which we had no reason to doubt; but we have no wish to enlarge on this subject, and therefore withhold our evidence, hoping that it will not be necessary to produce it.

Since the above was in type, we have received the following

VINDICATION OF DR. GARDNER.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

SIR,—To the attacks of that degraded portion of the public press which traffics in scurrility, I am and ever have been indifferent; but when a journal which is the avowed organ of a great Society, composed of a class for which I entertain no little respect, and amongst the Members of which I reckon many friends, so far departs from its usual course as to insert an attack on my character, I feel myself called on to point out its injustice, and to claim from it at least an adherence to truth.

In the first place, I protest against the tone and spirit of your article entitled "The Rise and Progress of a Philosopher," as unworthy of the character of a professedly scientific journal. It is quite true that I have risen; but of no step in my *rise* am I ashamed. By going a little further back you might have traced me in a far humbler position than as a medical man associated with a relative who was a Pharmaceutical Chemist. The little book of that relative, which you quote, contains many things of which I, of course, do not approve; but at the same time, if corrected and modified, it contains the germ of a book which would, in my opinion, be highly useful both to the Pharmaceutical Chemist and the public. I am not yet ashamed of my connexion with him. I should not feel myself disgraced by a similar connexion with any one of many thousands of the members of your body. The somewhat unusual enterprise indicated by publishing that little book has caused my relative also to "rise." He is now most successfully engaged in commercial pursuits.—I adhered to physic.

The next branch of your attacks contains most injurious mis-statements, which I cannot imagine you or any person who holds office in your Society could or would emanate. "Some enemy has done this." I trust I have no enemy amongst you, if I have, it has not arisen from any act of mine.

In attempting to establish a College of Chemistry, I had hoped to occupy a widely different field from that of your Society, my object was to advance, with other branches of science, Physiology and Pathology. If you have a copy of my "Proposal" at hand, be kind enough to look at it, and you will perceive that I had, in my design for a College, no hostility to Pharmaceutical Chemists.

I laboured at the work for three years, and in the end have only reached, as was said at one of your meetings "a great array of names and very little money." Twelve months ago I took the premises, 16, Hanover Square, on my own responsibility: no one but myself was, from June, 1845, to June, 1846, legally responsible for the rent, taxes, &c., amounting to upwards of £400 a year. During that time I incessantly exerted myself to get three persons to take the lease, but I could not. The settlement of that matter was left by the Council in my hands; at last it was only by joining in it myself that the lease could be completed: my name was associated with two others, not by me, but by the Solicitor of the Council; when done it was objected to by a small *clique* in the Council. The first meeting of the Council after it was known, passed a resolution to give me a HIGHER, more HONOURABLE, and SCIENTIFIC position in the College than that I had occupied.

The vote of suspension from my office of Secretary was passed at a small meeting, after most of the Members of the Council had left town, and for a cause totally distinct from the matter of the lease.

I believe that act to have been one unjustifiable in every way, and the work of a small party in the Council.

I resigned my connection with the College for the sake of peace to the Institution, and for my own interests. My practice being incomparably more important to me than the paltry pay of Secretary.

I repudiate as utterly false and groundless any and every insinuation of mercenary motives in my exertions for the advancement of science through the College. I have spent £500 in that object. I could gain nothing by having my name in the lease—my co-lessees gain nothing. The Institution is now, as it has been for twelve months trembling on the verge of dissolution for want of funds.

How could it proceed whilst I was the sole holder of the premises, and without a lease? I repeat I could get no one else to join in it; and one of the noblemen who signed it did so inadvertently, and wishes heartily to get out of it, as I do myself. I am still a lessee.

These facts will show you how widely you have been misled from the path of truth by your informant. I cannot believe for a moment that such papers as that directed against me can raise the character of the PHARMACEUTICAL JOURNAL, or gratify the Members of your excellent Society. That they should accomplish the purpose of one individual, who is publicly and privately exerting himself with an energy worthy of a better object, to injure me, I scarcely believe; but with your readers I wish to be put right.

A full and detailed statement of the origin, present state, difficulties and prospects of the Royal College of Chemistry will be found in my "Farewell Address to the Members," a copy of which is at the service of any one on application.

If I had been asked previous to the publication of your last number, who of all the known contributors to the public press was the least likely to have made a personal attack on me or any other individual, without being acquainted with the facts, my answer would probably have been Mr. Jacob Bell. If now he refuses insertion to this brief reply, it will add to my surprise that I should have been so mistaken in my estimate of his character.

I remain, Sir, your obedient servant,

JOHN GARDNER.

51, *Mortimer St., Cavendish Square,*
September, 1846.

COUNTER STATEMENT.

WE have received an authenticated account of the recent occurrence at the ROYAL COLLEGE OF CHEMISTRY, from a member of the College, who had access to the requisite documents.

The propriety of condensing it into the form of a short abstract, was under consideration, when Dr. Gardner's letter arrived (Sept. 24th). On comparing the two documents, we find so much discrepancy, that we could not, in justice to the College, publish Dr. Gardner's letter entire, without giving the full statement on the other side.

At a Meeting of the Council held on Monday, the 27th day of July, 1846, at five o'clock in the afternoon,

THE EARL OF DUCIE in the Chair,

The Secretary having read a statement to the Meeting, It was *proposed by* **Benjamin Bond Cabbell**, Esq., M.P., *seconded by* Dr. **Daniel**,

"That the Secretary do lay on the table the counterpart of the lease of the premises from Mr. Malcolm."

The Secretary having declined to produce the counterpart lease retired from the meeting, leaving the statement read by him with the Chairman.

Mr. **Dalrymple** then read a Report of the Sub-Committee of Accounts.

EXTRACT FROM THE REPORT OF THE SUB-COMMITTEE OF ACCOUNTS.

"A considerable time since it was directed by the Council that a lease should be prepared, vesting the premises in Hanover-square in the names of three gentlemen, and they were given to understand that this would be done as soon as three persons then named, *viz.*, the Marquis of Breadalbane, Viscount Newry and Morne, and James Adam Gordon, Esq., should have arrived in town. To the great surprise of the Sub-Committee they find this lease has been prepared and executed, and that the name of the Secretary has been inserted without the knowledge or consent of the Council as one of the lessees, and by the authority of the Secretary alone.

"The Sub-Committee cannot forbear to express their great regret at the difficulties they have experienced from the Secretary in their attempt to induce him voluntarily to withdraw his name from the lease, and to permit another name; to be sanctioned by the Council, to be inserted in its place. They have in vain tried to show him the wrong position they feel he has placed himself in, in giving instructions to the solicitor of the College, without previous communication with or consent of the Council.

"They lament to add, that he has carried his obstruction so far as to refuse to summon a Committee of Management at their request for Monday, the 20th July, 1846, after a delay of two days, asked for and granted to the Secretary. An intimation was also given by the Secretary to one of the Members of the Committee of Management, that the doors of the College would be shut against him, if he presented himself at the time agreed upon for the Meeting of the said Committee."

It was *resolved*,

"That Mr. Fuller, the solicitor of the College, be called to the Meeting and give information as to the lease."

Mr. **Fuller** being called in stated, that the premises were in the first place taken under a memorandum of agreement between Mr. Davies on the part of the lessor, and Dr. Gardner on the behalf of six individuals therein named, which agreement bears date the 28th of June, 1845.

Mr. **Fuller** also read a correspondence with Dr. Gardner on th subject of the lease, and stated that he received his instructions from Dr. Gardner, to insert his, Dr. Gardner's name in the lease, as one of the lessees.

Lord Ducie then retired from the Meeting, for the purpose of communicating with Dr. Gardner, to induce him to deliver up the counterpart lease in an amicable manner. On his Lordship's return, he informed the meeting that he had communicated with Dr. Gardner, who said he had not the counterpart lease with him; but that he, Dr. Gardner, would deliver it up to the Council at their next meeting.

At an Adjourned Meeting of the Council, held on Wednesday, the 29th of July, 1846, at Five o'clock in the afternoon,

PHILIP PUSEY, Esq., M.P. in the Chair,

It was *resolved*,

That Dr. Gardner be required to lay on the table the counterpart lease, agreeably to his promise to Lord Ducie on Monday last.

The question was then put to Dr. Gardner, when he referred the matter to his solicitor, and withdrew from the Meeting.

Dr. Gardner afterwards appeared before the Meeting, and delivered up the counterpart lease, which bore neither date nor attestation, stating that he had had a difficulty in getting it out of the hands of the lawyer with whom he had placed it.

At a Meeting of the Council held on Monday, the 10th of August, 1846, at Five o'clock in the afternoon, the Committee presented a report, of which the following is

AN EXTRACT.

"It appears that on the very day of the last Meeting of the Council, Dr. Gardner had taken upon himself to order the clerk of the works to suspend the continuation of the building. Foiled in this order, he deliberately addressed a letter to the Architect, instructing him to suspend the works, without consulting the Building Committee, the Committee of Management, or the supreme governing body, the Council, assembled on that very day, and with which he was so repeatedly in communication."

It was *resolved*,

"That Dr. Gardner be suspended from his office of Secretary, and that the duties thereof be performed by Mr. Johnson.

On Saturday, the 15th inst., when Mr. Johnson went to discharge his official duties at the College, about half-past nine in the morning, he was prevented from entering, the doors being fastened. The window-shutters were also closed, the knocker taken off the door, and the exterior of the premises bearing all the appearance of a place in a state of vacation. On trying to open the door in the usual manner by means of his latch key, it was partially opened by Dr. Gardner (the chain being so affixed as to prevent entrance) who told him, that he would not be permitted to enter. That he had no personal hostility towards him, Mr. Johnson, as an individual, but that he was taking legal proceedings, and had written to the parties interested.

Mr. Johnson replied, that he thought it a strange proceeding, and that if he, Dr. Gardner, did not then admit him, he would immediately take steps to procure admission.

Dr. Gardner replied, 'Never mind, Mr. Johnson, I am well advised, I have men in possession, and am quite prepared to repel force by force.'

Mr. Johnson then applied to Mr. Fuller, the Solicitor to the

College, for his advice and assistance as to the proper steps to be taken to regain possession of the premises, on consulting with whom, it was deemed advisable to use immediate means to obtain as quiet an entrance as possible, Mr. Fuller at the same time suggesting that it would be expedient for Sir James Clark, as one of the Council, and also one of the parties on whose behalf the original agreement for a lease was made, to apply in the first instance personally for admission into the premises, and that on a refusal on the part of Dr. Gardner to admit him, an entrance should be at once effected in the rear of the premises, in as quiet a way as possible. Sir James Clark agreed to this arrangement, and at about a quarter past twelve o'clock applied at the door of the College and demanded admission. The man having the charge of the door refused to admit Sir James; but withdrew for the purpose, as it is supposed, of receiving directions from Dr. Gardner. He returned, however, immediately, and without giving a reply, slammed the door in Sir James Clark's face.

An entrance was then effected into the house by the back door on the basement, and also by the back door on the ground floor, and Mr. Fuller placed two men in possession of the premises. A strong resistance was made after such entry was effected, on the part of the men employed by Dr. Gardner, one of whom seized one of the men after he had entered by the throat, causing him several times to cry murder. On entering the house, other persons were found in addition to the usual inmates, namely, the man who principally obstructed the entrance, and who assaulted the man as before-mentioned, and Mr. Strauss, who called himself the friend of Dr. Gardner, and who had armed himself with a poker. Dr. Gardner had, as it afterwards appeared, left the house at the moment the entrance was made, for the purpose of seeking the assistance of Mr. Phillips, his solicitor, who resides in Titchfield Street. He, however, shortly appeared, with Mr. Phillips, when, on the suggestion of Mr. Fuller, the two solicitors withdrew for the purpose of consulting together in the matter.

Mr. Fuller states, that after much discussion between them it was agreed that he, Mr. Fuller, should leave his man in possession of the premises, for whom Dr. Gardner should have a bed made up, and that a General Meeting of the Members of the College should be called, allowing an interval of fourteen days. Subsequently it was arranged upon the request of Dr. Gardner, that Mr. Fuller should withdraw his man out of possession, Dr. Gardner giving his word of honour that free ingress and egress should at all times be given to all parties in any way belonging to the College. This was settled in the presence of Mr. Phillips, who gave the keys of the lower part of the house to Mr. Fuller, the key of the street-door having been previously given to him. Mr. Fuller then gave the keys to Mr. Johnson, and left the house with his men, leaving Mr. Johnson in his room.

We cannot dismiss the subject without distinctly stating our opinion, that it is the duty of the Editor of any journal or periodical publication to animadvert upon the management of public institutions, and to notice the qualifications and conduct of the officers, or any other circumstance in which the prosperity of such institutions is concerned.

The Editor of a daily newspaper avails himself of the freedom of the press to criticize the policy and conduct of the members of the Government, or of other persons holding public situations. If a Secretary of State were to take possession of his office, barricade the doors, and deny admission to other public officers who had as much right of entry as himself, the *Times* and the *Morning Chronicle* would lash him without mercy. The Secretary of the College of Chemistry rides rough-shod over the managers, with His Royal Highness Prince Albert at their head—the Editor of a journal devotes a page to a brief notice of the circumstance, and is threatened with an indictment.

We sincerely regret the trifling technical inaccuracies which we have pointed out; and leave our readers to form their own opinions on the evidence now before them.

ROYAL COLLEGE OF CHEMISTRY.

At an Annual General Meeting of the Members, held on Monday, the 31st of August, 1846, pursuant to notice in the public papers, duly given for that purpose,

BENJ. BOND CABBELL, Esq., M.P., in the Chair,

The Council presented their Report, and the same having been read to the Meeting,

It was *proposed* by Neil Arnott, M.D.; *seconded* by John Spurgin, M.D. and *resolved* unanimously,

"That the Report now read be received and adopted."

The Abstract Account of the Income and Expenditure of the College from Midsummer, 1844, to the 22d of August instant, having been read,

It was *resolved*,

"That the same be entered on the Minutes."

The resignation of Dr. Gardner as Secretary to the College having been presented and read to the Meeting,

It was *proposed* by Mr. Tite; *seconded* by Sir James Clark, and *resolved* unanimously,

"That inasmuch as the late Council has somewhat exceeded its year of office since the date of the last Meeting, this General Meeting of the Royal College of Chemistry hereby sanctions and approves all acts done by them since the expiration of the year dating from the 29th of July, 1845; and that this General Meeting also accepts the resignation of Dr. Gardner of the office of Secretary of the College."

It was *moved* by John Dalrymple, Esq.; *seconded* by Robert Warington, Esq., and *resolved* unanimously,

"That the Thanks of this Meeting be given to His Royal Highness Prince Albert, for the warm interest he has taken in the prosperity of the Royal College of Chemistry, and for his condescension in laying the first stone of the new laboratories.

"That this Vote of Thanks be presented to His Royal Highness by Sir James Clark."

It was *proposed* by Dr. Ashwell; duly *seconded*, and *resolved* unanimously,

"That the following Noblemen and Gentlemen be named Vice-Presidents of the Royal College of Chemistry:

His Grace the Duke of Sutherland
The Most Noble the Marquis of Northampton
The Most Noble the Marquis of Breadalbane
The Most Noble the Marquis of Lansdowne
The Rt. Rev. the Lord Bishop of Durham
The Rt. Rev. the Lord Bishop of Oxford
The Rt. Hon. the Earl of Essex
The Rt. Hon. the Earl Fitzwilliam
The Rt. Hon. the Earl of Clarendon
The Rt. Hon. the Earl of Ducie
The Rt. Hon. the Earl of Aberdeen
The Rt. Hon. the Earl of Ellesmere
The Rt. Hon. the Earl of Chichester
The Rt. Hon. Lord John Russell
The Rt. Hon. Lord Viscount Palmerston
The Rt. Hon. Lord Brougham
The Rt. Hon. Lord Portman
The Rt. Hon. Lord Robert Grosvenor
The Rt. Hon. Lord Viscount Sandon
Rt. Hon. Sydney Herbert, M.P.
Sir Charles Grey
Sir William Denison
Baron Liebig
Professor Faraday
Richard Blakemore, Esq., M.P.
James Thomson, Esq.

It was *moved* by Roger Gadsden, Esq.; *seconded* by Atkinson Morley, Esq., and *resolved* unanimously,

"That the following Noblemen and Gentlemen do constitute the Council of the Royal College of Chemistry for the year ensuing, and that the government of the College be vested in them, together with the appointment and dismissal of all paid officers and servants thereof."

The Rt. Hon. the Earl of Antrim
The Rt. Hon. Lord Viscount Hill
The Rt. Hon. Viscount Newry and Morne
The Rt. Hon. Lord Viscount Ebrington
The Rt. Hon. Lord Thurlow
The Rt. Hon. W. B. Baring, M.P.
Sir J. John Guest, Bart., M.P.
Sir James Clark, Bart.
J. E. Denison, Esq., M.P.
Lieut.-Col. Wylde
William Ewart, Esq., M.P.
Philip Pusey, Esq., M.P.
George Tomline, Esq., M.P.
Thomas Wakley, Esq., M.P.
William Beckett, Esq., M.P.
Neil Arnott, M.D.
Benjamin Guy Babington, M.D.
John Raymond Barker, Esq.
Thomas Bevan, M.D.
William Thomas Brande, Esq., F.R.S.
Bransby B. Cooper, Esq., F.R.S.
Rev. J. Cumming, M.A.
John Dalrymple, Esq.
Henry Daniel, M.D.
C. G. B. Daubeny, M.D., F.R.S.
James Adam Gordon, Esq.
Edward Holland, Esq.
Charles Holland, M.D.
Richard Fort, Esq.
Charles Aston Key, Esq.
Captain Thomas Locke Lewis, R.E.
George Lowe, Esq., F.R.S.
Robert Porrett, Esq., F.S.A.
William Prout, Esq., M.D.
D. B. Reid, M.D.
George Rushout, Esq., 1st Life Guards
Alfred Samuel Taylor, Esq., F.R.S.
William Tite, Esq., F.R.S.
Atkinson Morley, Esq.
John Leslie, Esq.
Robert Warington, Esq.

An Amendment was proposed by Mr. Healy to reduce the number of Members of Council to twelve; but which amendment was afterwards withdrawn by Mr. Healy.

It was *proposed* by Charles Button, Esq.; *seconded* by Peter Squire, Esq., and *resolved* unanimously,

"That the Council be requested to draw up a Code of Laws for the government of the College, and that such code be presented to a Special General Meeting of Members for their approval."

Votes of Thanks were passed to the late Council, and other officers.

It was *moved* by Dr. D. B. Reid; *seconded* by Sir James Clark; and *resolved* unanimously,

"That the Council be requested to appoint a Special Committee to take into consideration the propriety of giving a Diploma to Students who have followed a systematic course of instruction in the Laboratory of the Royal College of Chemistry."

In drawing up our amended statement respecting the Secretary of the College of Chemistry, we could not avoid in some degree implicating the College by exposing the particulars of a transaction which occurred within its walls. Having been obliged to go thus far into the subject, we think it right to give some explanation of the causes of the catastrophe, so as to remove any unfavourable impression which might otherwise exist against the institution itself.

We have always felt a warm interest in the avowed object for which the College was projected; and the distinguished patronage which it has in so short a time acquired, is [illegible] sufficient proof that the importance of this object was appreciated by the nobility and gentry of the country. But we have from the commencement observed, with regret and apprehension, an under current in the proceedings, which destroyed our confidence in the sincerity of some of the most active projectors, and which led us irresistibly to the conviction that, sooner or later, a *dénouement* would take place which would astonish the noble patrons of the College. The *dénouement* has occurred, and this timely exposure of the motives of the parties to whom we allude is a most fortunate circumstance for the prosperity of the institution.

The first error in the establishment of the College, was committed by one of the members of the original Council, who commenced by decrying in unmeasured terms British Chemists in general (always excepting a few who had been students at Giessen), and by this discourtesy caused the project to be viewed with distrust or indifference by the parties thus reviled. In this he was joined, soon after the College was proposed, by the late Secretary, to whose presevering exertions the Institution is much indebted for the progress which it made at its commencement. At one period, for lack of funds, a special appeal was made to Chemists and Druggists, and as an inducement to co-operate, expectations were held out that for every guinea subscribed, a certain number of analyses would be performed at a merely nominal charge at the laboratory of the College. This proposal naturally excited the indignation and hostility of all analytical Chemists, and was therefore withdrawn.

The College being ostensibly founded to retrieve the credit and character of the British nation in reference to the science of Chemistry, it appeared to us inconsistent with this object to commence by reviling the representatives of that science in this country, and to follow this up by the appointment of a foreigner (however distinguished he might be) as the director of a College which was designed as a "NATIONAL Institution."

Some of the expedients resorted to in the first instance for obtaining names on the list of supporters, were such as we cannot approve in cases of this kind. In illustration, we may mention a conversation which is currently reported to have occurred between two of the parties whose names were placed on the printed list, and who happened to meet. *A*. What is this new College of Chemistry which I hear so much canvassed? *B*. The very question I was about to ask you. *A*. I know very little about it, but allowed my name to stand because I understood that you had taken up the subject. *B*. I consented because I saw your name on the list, and therefore concluded that it must be worthy of support.

The artifice thus exposed was quite unnecessary, and when detected operated in some cases prejudicially to the interests of an institution, the avowed object of which was sufficiently desirable to commend itself to the notice of all lovers of science on its own merits. In course of time, however, these difficulties were overcome, the College was taken up and supported by some of the nobility and professional men, with great spirit, and rapidly gained influence and strength in consequence.

One unaccountable oversight remains to be noticed. The College is patronized and supported by noblemen of the highest rank, with a few professors and medical men. His Royal Highness Prince Albert is its President—the first stone has been laid under flattering circumstances—and the laboratories are almost completed; yet, up to the present time, the College has neither laws nor constitution!

The only safe and proper course in forming a public institution, is to decide in the first instance what shall be its constitution—to define the nature of its government, the number and respective powers of the officers, whether honorary or otherwise, with the mode of election, and to draw up a code of laws as the basis of the future management. Until this is done the institution can scarcely be said to have any political existence. In the case before us we have a remarkable instance of the absence of method or regularity, as demonstrated in the resolutions passed at the Annual Meeting. From the third resolution it appears that the Council had exceeded their year of office, and we understand that during about a month they had been acting in the management of the College without authority, the period for which they were elected having expired. If efficient laws had existed it would have been the positive duty of the Secretary, under the instructions of the Council, to issue the summonses for the Annual Meeting at the proper time. Again, forty-one gentlemen were proposed as Members of Council for the ensuing year. A member moved as an amendment that the number be limited to twelve. So completely open was this question that any other member might have moved that the number be increased to a hundred, and the meeting was competent to pass any one of these resolutions—no restriction whatever existing as to the number of members to be elected.

In the absence of laws, the College has been regulated chiefly by resolutions of Council, and these are dispersed among the other records in the minute book. If a member should desire information on any point relating to the management, he must either search through the pages of these records, or apply to the Secretary, who, having the charge of the books, is supposed to be familiar with the contents. It is the duty of a Secretary to make the needful preparations for every meeting of Council, and on many occasions to prepare resolutions relating to matters which officially come under his cognisance, which resolutions when passed would, according to such an arrangement as that above stated, become in fact the LAWS of the Institution. It is therefore obvious, that the late Secretary of the College having taken a very prominent part in its establishment, and enjoying the confidence of the Council, possessed an amount of power incompatible with the usual functions of a paid officer. In proportion as this state of affairs was hazardous to the interests of the College, it was no doubt flattering to the Secretary, who by his own peculiar tact, aided by fortuitous circumstances, had acquired a position in which he might almost be styled the Solon of the institution. One other move remained to be made, and if this had succeeded, he would have won the game, providing permanently for himself and family in a position from which the Council could not at any time displace him, without relinquishing the premises in which the College was located. By the counter move of the Council, the Secretary was check-mated.

The College having escaped the snare into which it had almost fallen, and the Secretary as well as his friend before alluded to, being no longer concerned in the management, we feel encouraged to hope that it will thrive and prosper. We have hitherto abstained from any comments on the proceedings, in the conviction that the abuses which we knew to exist would ere long expose themselves, and that until the occurrence of the crisis no criticism would be of any avail.

No institution ever enjoyed brighter prospects, as far as patronage is concerned, than the College of Chemistry does at this moment. The objects for which it was founded are creditable and patriotic, and judicious means should be adopted for effectually carrying out these objects, and for guarding against the perversion of the institution to unworthy purposes.

The most important subject for consideration is the formation of a code of laws, a task which we understand is already undertaken; and the prosperity of the College will in a great measure depend on the judgment with which these laws are drawn up.

The constitution of the College should be clearly defined. The government should be vested in the Council for the time being, who should be responsible to the members at large, and called upon to report their proceedings to the Annual Meeting. The Secretary should be under the controul of the Council, and no paid officer should be elected by the members at large. The regulations respecting the laboratory should be maturely considered; and on this subject we intend to offer some remarks on a future occasion.

It must be remembered that, in parting with the late Secretary, the Council are deprived of the services of a very active officer, and that it will be necessary for others who are interested in the welfare of the College to apply their shoulders to the wheel. Great names, although much to be desired in the list of patrons, will not be found effectual in carrying out the objects in view without the aid of "working men," experienced in the management of scientific institutions, and able to devote their time to the laborious duties involved in the minor details.

AMORPHOUS QUININE.

THE discussion which has taken place in this and some other journals respecting the so called Amorphous Quinine, has not hitherto resulted in a satisfactory explanation of the questions involved; but, on the contrary, has left the Medical Profession, as well as Chemists and Druggists, in a most anomalous position. Although four months have elapsed since the publication of Baron Liebig's paper, manufacturers are, up to the present time, in doubt whether they may or may not furnish the article in question to the public without incurring the liability to legal proceedings. It still remains to be shown whether the patent right applies to the manufacture and sale of the remedy in any form, and under any denomination; or whether the prohibition refers only to the use of the name of Liebig, and the application of the term "Amorphous Quinine" to a substance or compound which has for some years been an article of commerce under another name. We know that it has become a common practice, when amorphous quinine is ordered, to send quincidine; and the two substances, namely, the patented article and quinoidine, have been ascertained by Chemical examination to be nearly, if not absolutely, identical. This remark does not apply to the "Amorphous Quinine," *as described by* BARON LIEBIG; which, however, is not in the market at all, it being considered that the patent prohibits its manufacture by Chemists in general. Indeed, if prepared according to the published process, the cost would, we imagine, be nearly, if not quite, equal to that of crystallized quinine, on account of the high price of ether in this country.

Various rumours have been, and still continue to be, in circulation respecting the circumstances under which this remedy was introduced into notice, and as a satisfactory explanation would be advantageous to the profession, as well as to the parties more immediately concerned, we think it right to advert to the subject.

In our number for August we pointed out the fact, that on the 13th of May (ten days before the publication of Baron Liebig's paper) a patent had been granted to a Chemist in London for the preparation of this new remedy, as a communication from a foreigner residing abroad.

It was not known until about a month after the publication of the paper, that the remedy was patented; and during that interval the subject was frequently brought forward in the most prominent manner, and with very flattering eulogiums, in the *Lancet*. While the editor of the *Lancet* was in ignorance of the real nature of the transaction, and therefore allowed his pages to be the vehicle for these panegyrics on what he believed to be a valuable scientific discovery disinterestedly given to the public, it was notorious that the patentee was in constant communication with Dr. Gardner, the translator employed in the German department of that journal, who read a paper on Amorphous Quinine, on the 3d of June, at a *soirée* at the College of Chemistry. This completed the flourish of trumpets, and shortly afterwards several manufacturers announced their intention to offer the new remedy for sale, on which the advertisement appeared stating that it was the subject of a patent. The profound secresy which had been maintained respecting the patent during the above period of time created some suspicion: and when it was ascertained that the patented "amorphous quinine" was an impure compound, but little if at all superior to quinoidine, a well known article of commerce, which is sold at one-fourth of the price, the whole transaction was considered to be so mysterious that some explanation was absolutely requisite.

In cases of this kind, a departure from the usual straight-forward course naturally gives rise to various conjectures, and in this instance it was currently reported, and generally believed, that several parties, besides the patentee, had an interest in the speculation; and that the plan above mentioned had been resorted to for the purpose of ensuring its success, by bringing the new remedy before the profession as a scientific discovery, eulogised in a widely circulated and influential journal, and in other quarters—in a manner which would have been indelicate had it been known to be merely a commercial transaction.

We threw out a hint on this subject in the article above alluded to, and the Editor of the *Lancet*,* in consequence, personally authorised us to contradict the report as far as concerned himself, declaring that he had no interest whatever in the patent, and had not the least idea that the amorphous quinine had been patented until he saw the advertisement, on the appearance of which he immediately prohibited the insertion of any more puffs in the *Lancet*.

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* We were surprised that the Editor of the *Lancet* did not contradict, in his own journal, the report which had been in circulation, especially after his severe comments on Medical men, in reference to other transactions of an unprofessional character, with which their names are sometimes unjustly associated.

Baron Liebig has hitherto observed silence on the subject. It is currently reported that he has a pecuniary interest in the speculation ; no contradiction has appeared, and yet the allegation is unsupported either by admission or by evidence. It is this mystery which we consider objectionable, as it places one of the most distinguished Chemists in Europe in a position from which his high reputation ought to have shielded him.

It must not be supposed that we call in question the propriety of protecting Chemical discoveries by patent—that we deny to the Chemical philosopher that reward to which he is as much entitled as the discoverer of any improvement in machinery or in the arts. On the contrary, we consider it a subject for regret that men of science are in most cases very inadequately rewarded for their talents and exertions, and we should rejoice to see these public benefactors not only appreciated, but substantially recompensed according to the benefit which they confer on mankind by their discoveries. It is true, that some philosophers take high ground, and being insensible to the ordinary motives of action, sacrifice their lives to the cause of science, giving the result of their labours to the public, and claiming no reward but the fame of a philosopher and the consciousness of adding a page to the book of knowledge ; but this utopian disinterestedness may be carried to such an extent as actually to deprive the parties of the means of continuing their investigations and enjoying the ordinary comforts of life; and while we admire the purity of the motive we cannot applaud the prudence of the sacrifice which it induces.

The author of any discovery has the option of making his election as to the mode in which he will be rewarded. Either he takes the highest ground as a philosopher, and claims the reputation of giving to the public the benefit of his labours, or he chooses the more substantial remuneration to which he is justly and honestly entitled. If in the case under consideration, the paper on Amorphous Quinine had been published with the statement, that the author had protected himself by patent, we feel persuaded that no comment would have been made on the circumstance, but that the profession would have been glad to have contributed at the same time to the resources of the illustrious discoverer, and to the wants of the public by introducing and recommending the new remedy. The chief anomaly consists in the fact, that the patent was taken out (secretly), not by the party entitled to the reward, but by a person who neither had, nor pretended to have, any claim to the merit of the discovery. Baron Liebig had an undoubted right to give the benefit of his discovery to whom he pleased: but having given it to the public, he could not make it private property afterwards. If it had been given to the patentee prior to the publication of the paper, why was the fact suppressed? or if the secret was obtained indirectly by him, why has the transaction been so long unexplained? *

The value of the discovery is said to consist in its offering a new and *economical* source for obtaining a medicine which the author states is " absolutely indispensable for the treatment of diseases," and on the discovery of which " the progress of civilisation in modern times has depended more than has been conceived." That this object has been frustrated may be shown by comparing the compound sold by the patentee as *amorphous quinine*, with its representative *quinoidine*, the price of which is raised 400 per cent. on account of the patent, which the patentee informs us is intended " to protect the public, the profession, and last, though not least, himself."

ON QUINOIDINE.

BY MR. REDWOOD.

SINCE the publication of the fact that the amorphous quinine, for which a patent has been taken out in this country, is neither more nor less than the substance which has long been known in commerce under the name of *Quinoidine*, or *Chinoidine*, numerous inquiries have been made as to the difference, if any, *in quality*, between the patented preparation, and the quinoidine in the state in which it is met with in commerce. Most of the wholesale houses are now supplying quinoidine at one-fourth the price of the patented amorphous quinine, and there can be no reason why the former should not in all cases be substituted for the latter, if it be found to be equal to it in quality.

It has been already shown that quinoidine and the patented amorphous quinine, are both mixed products, containing several proximate principles, and that one part of these principles is soluble, the other insoluble in ether. Even the part which is soluble in ether, is found on examination, to consist of two or three bodies, which, to a certain extent, may be separated by crystallization. No method, however, has yet been pointed out by which the whole of these bodies may be readily and completely separated from each other; indeed, the task would be nearly as difficult as that of resolving a specimen of extract of bark into its proximate constituents.

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* On referring to the regulations respecting Patents, published by Messrs. Robertson and Co., of Fleet Street, we find that " Any person, whether a native or foreigner, may obtain Letters Patent in this country; but in the case of a foreigner not domiciliated here, the Patent must be taken out *on his behalf* by some person resident within the United Kingdom, as *a communication from a foreigner residing abroad*."

" No British subject can Patent in his name, an invention which is the communication of another British subject, unless the inventor is abroad, or is deceased."

But although quinoidine and the patented amorphous quinine have no more title than some of the medicinal extracts to be classed among definite chemical bodies, yet we may judge of the qualities of different specimens of these substances, by the examination of their physical and chemical characters.

Quinoidine, it is well known, is obtained from the dark-coloured mother-liquor remaining after the crystallization of the disulphate of quinine. In the evaporation of this liquor, similar changes no doubt take place to those which occur in the preparation of extracts; and the quinoidine which is precipitated by the addition of an alkali, will be subject to variations, according to the greater or less degree of heat, and of atmospheric action to which the liquor has been exposed. Again, if, instead of adding an alkali to precipitate the quinoidine, the liquor be simply evaporated to dryness, the product, will, of course, be very different; it will now be more or less soluble in water, in consequence of the presence of the acid. Some specimens of quinoidine are said to have been obtained in this way.

Thus quinoidine is liable to variations in quality and in composition, arising from two distinct causes.

In examining specimens of quinoidine, with the view of estimating their qualities, the following method may be adopted:

The specimen should be dried by the heat of a water-bath, until it ceases to sustain any further loss of weight.

(*a*) A weighed quantity of it is to be dissolved in distilled water acidulated with sulphuric acid, and ammonia added to the solution as long as any precipitate is formed. This precipitate is to be collected on a filter, washed, dried by the heat of a water-bath, and then weighed. The two weighings should correspond, if the specimen be good.

(*b*) A portion of the dried specimen is to be treated with rectified spirit, in which it should be perfectly soluble. Those specimens, the solutions of which have the lightest colour, are most free from smell, and in taste approach to a pure bitter, may in these respects be considered the best.

(*c*) A weighed quantity of the dried specimen is to be treated with ether as long as anything is dissolved by this menstruum, the solution being promoted by trituration in a mortar; the ethereal solution is to be submitted to spontaneous evaporation in a large porcelain dish, and the insoluble residue dried by the heat of a water-bath, and weighed. The insoluble part should not amount to more than thirty per cent. of the dried specimen. After the residue of the ethereal solution has stood for several days, it should be examined under a microscope, when it will be found to contain two kinds of crystals, one small and acicular—the other larger, in rhombic prisms. The former of these is quinine, the latter cinchonine, the proportions of which vary in different specimens.

I have met with no specimens, at present offered for sale in the London market, in which the presence of foreign matter was indicated by the tests (*a*) and (*b*). On treating different specimens with ether, as described (*c*), considerable difference is indicated. Some specimens contain as much as thirty-five per cent. of insoluble matter, while from one specimen that I have examined, there was only twenty-five per cent. of residue.

There is a difference in the appearance of the insoluble residue obtained from different specimens; in some cases it is much darker coloured than in others. The specimen yielding twenty-five per cent. of residue, is the best that I have met with; when reduced to powder, it is of a light brown colour; it forms a solution in spirit, or in water with the addition of an acid, which is not so nauseous in taste, as similar solutions formed from some other specimens, not excepting the patented preparation. Moreover, the portion insoluble in ether, is of a much lighter colour than that obtained from the other specimens. This specimen appears to have been less exposed than the others to heat and other decomposing agencies.

I understand that some amorphous quinine, prepared according to Liebig's process, by solution in ether, has been made; but this will not, probably, be offered for sale, until the specification of the patent has been filed, when it will be known what the patentee's process is, and how far it will affect the manufacture and sale of Liebig's preparation by other parties.

There can be no doubt, however, that *quinoidine* may be made and sold as heretofore, without any reference to the patent; and it will be a question for the profession to consider, whether they will purchase it under its old and well-known appellation, and at its fair market value, or whether they prefer paying for the privilege of using it under a new, assumed, but false title.

TRANSACTIONS
OF
THE PHARMACEUTICAL SOCIETY.

LIST OF MEMBERS, ASSOCIATES AND APPRENTICES (*continued*).

Elected August and September.

MEMBERS.

Blackpool	Moore, John, North Beach
Bradford	Duckett, John B., Tyrrel Street
Birmingham	Wareham, George, Phillip Street
Derby	Stevenson, Richard, 4, Victoria Street
London	Adams, Edwin, Crosby Row, Walworth
	Burden, Thomas, 6, Store Street, Bedford Square
	*Moore, James Lodge, 1, Brook Street, Paddington
	Nicholson, William Wilson, 3, Lower York Place, Kentish Town
Margate	Evenden, William Sheafe, 31, High Street
Salisbury	Squarey, Newell Vicary, Market Place
Shields, North	Taylor, William James, 14, Tyne Street
Tranmere	Lewis, Edward, Limekiln Lane

REGISTERED APPRENTICES.

APPRENTICES.	RESIDING WITH	TOWN.
Blenkhorn, John Haw	Mr. Thomson	Thirsk
Bateman, Henry	Mr. Bateman	Stroud
Bullock, John	M. Fielder	Newbury

ORIGINAL AND EXTRACTED ARTICLES.

ON THUNDER-RODS, OR PARATONNERRES.

BY ANDREW URE, M.D., F.R.S.

A principal object contemplated by the founders of the Pharmaceutical Society, is the elevation of the intellectual character of its members; a consummation to be aimed at, not merely by technical disquisitions subservient to the shop, but by occasional excursions into the interesting regions of physical science. Our climate having become during this and the preceding seasons, the theatre of an unusual number of electrical commotions, in many cases attended with fatal effects, a few observations on the theory and practice of lightning conductors may not prove unacceptable to your readers; especially, as we shall have occasion to notice a most ludicrous example of ignorant prejudice on the subject in an opulent Association.

About a century ago (July, 1747) Benjamin Franklin, then unknown to fame, though destined ere long to occupy an honourable niche in its temple, wrote from Philadelphia to the Secretary of our Royal Society, that "a point will throw off, as well as draw off, the electrical fire;" which he proved by attaching a needle, either to the prime conductor, or to the body that was electrified thereby. Two years afterwards, he says, "A pin held by the head, and the point presented to an electrified body, will draw off its atmosphere at a foot distance; whereas, if the head be presented instead of the point, no such effect would follow. Now if the fire of electricity and lightning be the same," he adds, "may not the knowledge of this power of points be of use to mankind in preserving houses, churches, ships, &c. from the stroke of lightning, by directing us to fix on the highest parts of those edifices upright rods of iron, made sharp as a needle, and gilt to prevent rusting, and from the foot of those rods, a wire down the outside of the building into the ground, or down round one of the shrouds of the ship, and down its side till, till it reach the water? Would not these pointed rods probably draw the electrical fire silently out of a cloud before it came nigh enough to strike, and thereby secure us from that sudden and terrible mischief?" The prophetic sagacity of science was never so happily illustrated, nor its indications more judiciously directed to the uses of life.

These admirable suggestions were soon acted upon, both by himself and the philosophers of Europe, not merely revealing the nature of that celestial fire, but enabling the slender arm of man to grapple with and disarm the thunder-bolt, that awful attribute of ancient Jove. This grand verification of Franklin's ideas was first made in France on the 10th May, 1752, and next by himself in the following June. The efficacy of a metallic conduct was accidentally evinced on a church at Newbury, in New England; where a wire, no bigger than a common knitting needle, extending from the bell of the clock twenty feet downwards, protected the steeple perfectly, though it was itself exploded by the electrical discharge; but from the termination of the wire to the ground, the building was exceedingly rent and damaged; some stones in the foundation wall being torn out and thrown to the distance of twenty or thirty feet.

The power of points to repel a thunder-cloud and prevent a discharge from it, is finely illustrated by suspending on a linen thread in a series, three loose flocks of cotton, from the prime conductor of an electrical machine. As soon as it is excited, the cotton fibres will repel each other, and all stretch towards the table underneath the machine; but on holding the point of a needle a little way under the tufts, the lowest will collapse and fly upwards, so as to cling to the one above; then these two will coalesce with the highest, and the whole will finally cohere to the prime conductor, remaining there contrary to gravity till the needle is removed, when they will all dart downwards, and expand as at first. This is a miniature representation of what may be observed in a thunder-cloud, as it slowly descends towards the point of an elevated thunder-rod. The advantage and propriety of pointed conductors over blunt ones, were established by the decision of a Committee of the Royal Society of London, in 1772, and again in 1777; of both which Dr. Franklin was, I believe, a member, or was at least consulted on these occasions.

The principles of paratonnerres have been investigated profoundly by the French philosophers Coulomb, Biot, and Pouillet. When an electrized cloud passes at such a distance as that its influence is sensible, it decomposes the natural electricities of the rod, repels that of the same name (the vitreous or positive, for example), and attracts the opposite, which rushes to the upper point acquiring an intensity proportional to that of the cloud. Let us suppose the rod to be one-half inch in diameter, and placed 500 feet from a cloud, whose influential sphere has a radius of one thousand feet, we shall find on calculation, that the thickness or power of the electrical coat, at the extremity of the pointed paratonnerre, is nearly 250 times greater than that of the cloud. The pressure against the air being always proportional to the square of the thickness of the coat, will consequently be sixty-two thousand times greater. Hence it follows that the particles of damp air between the cloud and the point, must rush most rapidly towards it, to deposit the electricity imparted by the cloud, receive a strong charge of the reverse electricity, then flying from the point, by the repulsion of like electricities, dart up towards the cloud, and neutralize all the particles which it meets with in its course, till by this alternating movement it has completely discharged the thunder. Thus in general the discharge is effected without explosion, so that all the bodies beneath and around the paratonnerre, to a certain distance, are quietly protected. But if, in extraordinary cases, this rapid interchange of the two electricities is inadequate, either from the magnitude of the accumulation, or the velocity of its advance, then an explosion will ensue, and it must infallibly be directed to the pointed rod, since there the reciprocal attraction of the two opposite electricities is incomparably strongest. Experience fully justifies this theory.

After violent thunder-storms, though the points of the conducting rods have been occasionally found to be fused, yet if well constructed the buildings to which they were affixed suffered no injury, not even the slightest vestige of a shock. The kite of Franklin, when raised in a thunder-storm (with suitable precautions) shows beautifully that alternating process of electrical decomposition and transfer. After darting fire bolts through its lurid mass, the cloud, on approaching the kite, pours down through its wire a brisk series of sparks, like a stream of fire, and then soon withdraws in silence, evidently exhausted, or at least lightened of its charge.

The effect and utility of paratonnerres being incontestible, the only question is as to their most advantageous construction. Two conditions appear to be indispensable:—The first is, that a perfect communication should be established between the earth and the several parts of the apparatus. Without this precaution the lightning would act violently upon the spots where the chain is interrupted, and cause far more mischief than would have happened without the pretended protector. A fine illustration of this position was afforded when a thunder discharge fell upon the vane of St. Bride's church (London) about seventy years ago. The bolt sprang from the lower end of the iron spindle of the vane to the upper end of an iron window bar, and burst the stone into which it was fixed, by expanding its moisture into steam. In like manner it burst the stone at the lower end of this bar to make its way to an iron cramp which connected the opposite sides of the steeple; from this it struck to another cramp; and so from cramp to cramp, like so many stepping stones, till it reached the gutter leads of the church, bursting and throwing off the stone-work in many places. All interruptions of metallic conduct ought therefore to be carefully avoided. St. Peter's church, Cornhill, was eight times struck by lightning between 1772 and 1787; while St. Michael's in its neighbourhood, and much higher, has never had a stroke since 1772, when it was furnished with an excellent pointed conductor by Mr. Nairne.

The second condition is merely a corollary from the first. The rod should be formed of the best conducting material, and be of sufficient size. One of copper, an inch in diameter, will serve to discharge any quantity of electricity which its point can receive, for none of this dimension, even of iron, has ever been exploded, and copper is a better conductor than iron, being above three million of times preferable to water in this respect. Since the electricity is exceedingly condensed at the opposite extremities of the rod, the bottom of it should be placed in close and ample contact with good conducting matter in the earth. Generally speaking, the lower end should terminate in a ball sunk in moist ground, from which a number of roots of thick copper-wire ramify to some distance, and finally into water if convenient. In a town furnished with water-pipes, the best plan is to bring the under-end of the rod into contact with one of them, whereby any imaginable quantity of electricity would be quietly diffused through the whole system of pipes. The top of the rod should terminate in a sharp conical point of solid platinum.

Having been consulted about two years ago by Benjamin Wyatt, Esq., Architect of the Duke of York's column, who was directed by his Grace the Duke of Wellington to furnish it with a lightning conductor, I recommended the above described plan, which was very well executed, under my superintendence, by Mr. Reid, constructor of the electric telegraphs for the railways. The monument itself became perfectly thunder-proof when its bronze summit was placed in metallic communication with the ground; but it was deemed fitting that this classic memorial of the royal commander-in-chief of the British Army, should extend its protecting power over the Senior Service Club-House, the social rendezvous of our military heroes, the objects of his patronage, care, and affection. This purpose was gained by affixing a small pointed cone to the top of the statue. With the view of placing the inferior extremity of the rod in contact with the nearest water-pipes, I applied to Mr. Simpson, engineer of the Chelsea water-works for permission, and was referred by him to the Directors. This application was formally and respectfully made by Mr. Wyatt, in the name of the Duke of Wellington and the other distinguished noblemen and gentlemen of the Committee for erecting the monument; and was answered, after "due deliberation," as the water-works directors said, with an *absolute refusal*. It is marvellous to find such ignorance and illiberality among a body of opulent and influential citizens in London in the year 1844. As well might the inhabitants of Wapping dread an inundation of the river into their houses by the bursting of an half-inch water-pipe, as the water company the explosion of their underground metallic property, by its contact with a one-inch copper rod.

London, 13, *Charlotte Street, Bedford Square*,
18*th September*, 1846.

ON THE OXIDE OF SILVER.

BY BUTLER LANE, M.D.

SINCE my last publication on the use of the oxide of silver, in the *Medical Gazette*, I have received numerous applications in reference to the subject of its preparation, mode of employment, &c. The oxide of silver is now a remedy of acknowledged value (it will, I understand, have place in the next Pharmacopœia) and as I consider much of its medicinal effect to depend on its being chemically genuine, I am annoyed at finding that very erroneous methods of preparation are still resorted to. That with ammonia is far the most objectionable, first on account of the attendant danger, for I have been informed of several severe accidents which have been occasioned by explosion during the process of manufacture. Also when the medicine thus prepared is made up in pills, spontaneous combustion is apt to ensue, much to the dismay and inconvenience of the compounder. But most especially, the therapeutic action of the medicine thus prepared, is not what it should be, for the presence of the smallest portion of ammonia in combination will tend to render the silver more readily soluble, and consequently more irritant in its action. The chemical peculiarity of the ammonio-metalloid salts will bear me out in this assumption.

I therefore beg to avail myself of your journal, to direct attention to the following simple formula, which careful inquiry and long experience have convinced me should always be resorted to:

Dissolve four parts of nitrate of silver in distilled water, also rather more than two parts of hydrate of potash in a separate quantity, freeing it by filtration from the oxide of iron and other impurities; mix, and let stand for an hour, stirring frequently with a rod of wood or glass; the supernatant liquid will be found a solution of nitrate of potash, the freedom of which from nitrate of silver may be ascertained by taste, or by testing with hydrochloric acid, showing that complete decomposition has been effected, otherwise more solution of potash should be added. The fluid is then to be poured off, and the precipitated oxide of silver to be washed repeatedly with distilled water until the liquid is found to remain perfectly clear and quite devoid of all taste and alkaline reaction. The precipitated oxide is then to be drained on filtering paper, and thoroughly dried at a temperature of about 180° Fahr.

Four parts of nitrate of silver thus treated, will be found to yield about three parts of the oxide. This mode of preparation will be found very facile, and totally unattended with danger. I hope, therefore, it will be generally adopted, so that the remedy may be furnished in a state of uniform efficiency.

I am about to have printed a brief abstract of my views as to the use and administration of the oxide of silver, and I shall be happy to furnish any parties with some copies for distribution with the medicine, if they will apply to me by post.

Ewell, Surrey, Sept. 19th, 1846.

PROCESS FOR PREPARING CANNABINE(?), OR HEMP RESIN.

BY T. AND H. SMITH, EDINBURGH.

The following method for the preparation of hemp resin, among several tried by us successively, is the one to which we give the preference; and, agreeably to promise, we now send the details for publication in the *Pharmaceutical Journal.*

The plant is, after being bruised, digested in repeated portions of moderately warm water, pressing out at each time till the water comes away colourless. It is then digested in a solution of crystallized carbonate of soda, using of this half the weight of the quantity of dried gunjah* operated on. After macerating at a moderate heat for two or three days, the liquid is pressed out, and pure water substituted; and this is repeated till the water comes away nearly colourless. The washing is for the purpose of removing a large quantity of brown colouring matter, which we have found it difficult to remove in any other way than this. The alkali removes a further quantity of colouring matter, along with a large quantity of a fatty acid, *quite inert*, which may be got by adding an acid to the alkaline liquid after filtration. The plant is now dried till it ceases to lose weight, and then macerated or percolated with strong rectified spirit of wine. To the spirituous solution a milk of lime, as thick as cream, is added, containing one ounce of fresh burnt lime for every pound of the plant. The lime removes any of the fatty acid and chlorophyle which may have been left by the soda. After filtration, a slight excess of sulphuric acid is added to throw down in the state of sulphate the lime left in the liquid; for this purpose one or two fluid drachms for every pound of the dried plant will be quite enough. A little pure animal charcoal is now also added, and shaken with the liquid for some time. We may mention that the decolourizing action of the charcoal is very limited; for, after acting with one portion and filtering, and repeating the process with another, the filtered liquid on comparison will not appear any lighter in colour than the first. The greater part of the spirit is now, by distillation, recovered from the filtered liquid, and the resin washed out with a small quantity of rectified spirit. Three or four times its bulk of water is then mixed with the liquid, and the dish (a porcelain basin) is set aside till the spirit has completely escaped by evaporation. The resin, being heavier than the watery liquid now left, remains at the bottom of the dish. The fluid is now carefully poured off, and fresh water used till it comes away free from any sour or bitter taste. The resin is now dried either spontaneously or by the aid of heat; and to expedite the drying, it is spread out occasionally in a thin layer on the side of the dish.

The resin is brown in mass, but of a fawn colour, in thin layers. Heated on platinum foil it melts into a liquid, takes fire, burns with a bright white flame, and disappears entirely. Two-thirds of a grain acts upon ourselves as a powerful narcotic, and one grain produces complete intoxication. In this character it is quite analogous to alcohol, but in its hypnotic and soothing effects on the nervous system, its resemblance to morphia is very great. It contracts the pupil. It does not seem to have any spasmodic or paralysing action upon the bladder.

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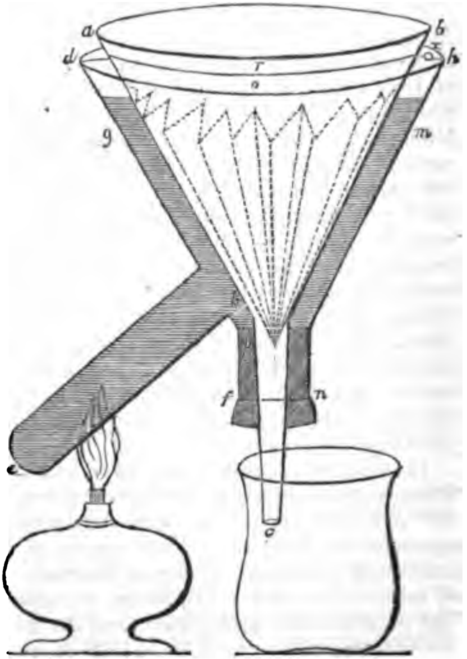
* Gunjah is the dried Indian hemp plant.

One experiment of ours shows that the peculiar action of hemp resin on the human system is not easily destroyed, and is retained with great tenacity. We heated in the open air a dose of the resin, spread out so as to cover nearly two square inches of the bottom of an evaporating basin, at a temperature of 180° Fahr., for eight hours continuously, notwithstanding which treatment it appeared to us on trial not to have suffered the least diminution of its energy. The resin contains the whole power of the plant, which we have proved by taking a quantity of the plant equivalent to a dose of the resin. We could observe no difference in strength of action. The dried gunjah yields from 6 to 7 per cent. of the resin.

21, *Duke Street, Edinburgh*, 16*th September*, 1846.

THE WATER-BATH FUNNEL OF MR. PLANTAMOUR,

OF GENEVA.



a, *b*, *c*, is a glass or porcelain funnel, surrounded by, and nearly parallel with, a tin funnel. *d*, *g*, *f*, *n*, *m*, *h*, which is so large that the interior space between the two funnels is about half-an-inch. *k*, *e*, is a tin tube of 6-9″ diameter, soldered at *k* to the outer funnel, and of a length proportionate to the same. *d*, *o*, *h*, *r*, is a tin plate, that is soldered to *d*, *o*, *h*, the brim of the tin funnel, and whose interior opening at *r* is so wide, that the glass funnel can pass through it, but project at the top about *r*. At *x* a small aperture is made in this flat ring in order to furnish the apparatus with water, and to allow for the steam to escape; *p* is a good cork, which hermetically closes the outer funnel, and which it does easily, as the cork swells in the boiling water. The apparatus being filled with water, a small spirit lamp is placed under *e*, which will be sufficient to keep the small quantity of water between the funnels boiling. It is to be observed, that the distance from *c* to *e* should be smaller than the diameter *d*, *h*, in order that the funnel may pass the ring of the stand, and rest on the same, somewhat about *g*, *m*. It will also be advantageous to make the tube *k*, *e*, longer than in the annexed print: it should descend about one inch below the point of the glass funnel, but this must depend on the size of the funnel. The point of the glass funnel itself, however, must project no more than 10-12‴ below the cork, as it would otherwise soon be stopped up by substances which easily congeal or crystallize.

The use of this simple and cheap apparatus is to filter boiling hot saturated solutions, without permitting the salt or acid contained in the solution to crystallize in the filter during the process. Thus a boiling hot saturated solution of cinnamic acid (or benzoic acid) may be very easily filtered by it, without the deposition of crystals in the filter. A warm concentrated solution of stearic acid in spirit of wine (or opodeldoc) goes through the filter like a solution of sal ammoniac. So also fat oils, melted stearic acid, &c., can easily be filtered by this funnel, which has already been introduced with success in all the laboratories of Geneva.—*Buchner's Repertorium*, Band xliii, p. 234.

POISONING WITH THE BERRIES OF ATROPA BELLADONNA, OR DEADLY NIGHTSHADE.

Several cases of poisoning from eating the ripe berries of the Atropa belladonna, have recently occurred in London, and the circumstances which led to their being eaten, without a knowledge of their deleterious properties, have been published in all the newspapers. In two cases, death has ensued. The man, John Hilliard, by whom the fruit was sold in the streets, and recommended for making tarts and puddings, has long been known in the eastern districts of the metropolis, as a herb-collector; and as it was considered by the magistrate before whom he was examined, that from the nature of his occupation, he could not be ignorant of the poisonous properties of the fruit, he has been committed to take his trial for wilful murder. The fatal cases were those of a man aged thirty-four, and of a child aged three years. The former of these is supposed to have eaten about thirty of the berries, the latter not so many, but in both cases the fruit had been made into a pie, and baked. The man died eighteen hours and a half, the child twenty-nine hours, after partaking of the pie.

The first symptoms, which were experienced in about ten or fifteen minutes, were an unpleasant metallic taste in the mouth, and a hoarseness in the voice. Subsequently flushings of the countenance, dilatation of the pupils of the eyes, and general excitement came on. This was followed by giddiness, a feeling of intoxication, and a disposition to quarrel, laugh, and talk. The pulse became accelerated, and the mind filled with hallucinations, which increased to a state of absolute madness. This state lasted from one to twelve hours, and was then succeeded by one of insensibility, somewhat similar to that of a person in the last state of intoxication. In the fatal cases, this state lasted to the end.

We subjoin the following account from the *Gardener's Chronicle*, together with a wood-cut of the plant:—

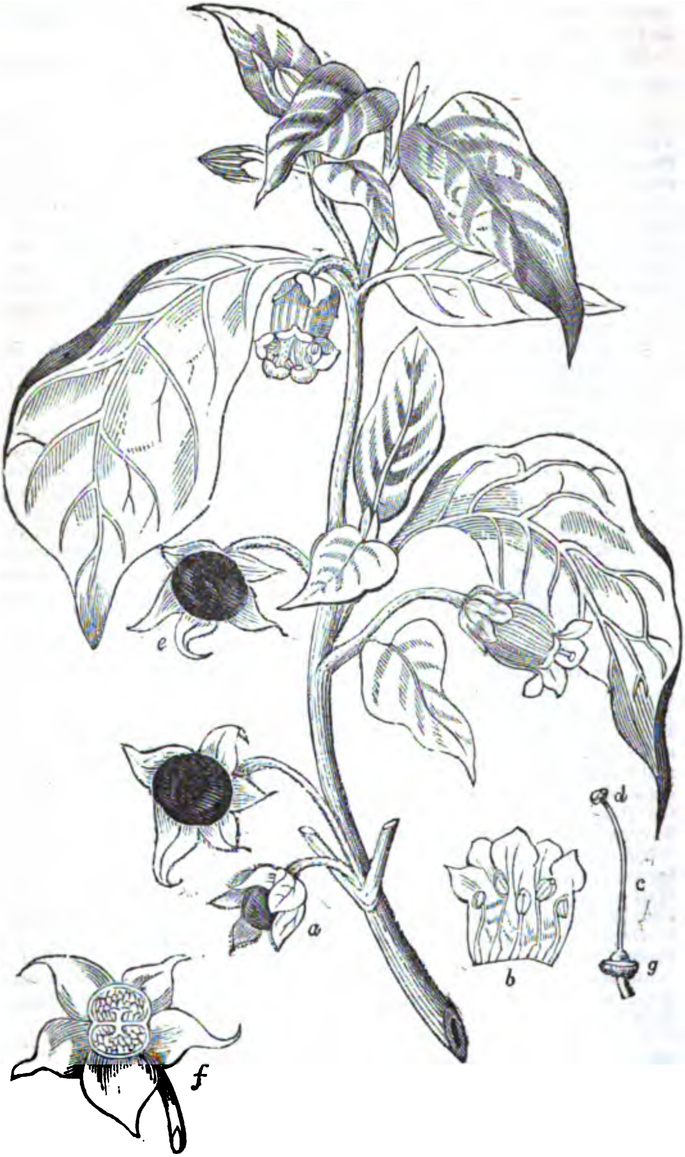
In ruined and desolate places, in the skirts of woods, among the offal of a garden, there grows a "wicked weed" which our ancestors called Dwale. Its very name is portentous of misery and woe. Unlike some of those plants which conceal their venom under a fair aspect, or disguise it by a fragrant odour, this is fetid in its leaves, and repulsive in its flowers, which are dull pale chocolate coloured bells, with a lurid yellow bottom. There is not a point of beauty about the thing till it bears its fruit, but then it becomes only too attractive. No cattle will touch it; not a fly or grub finds a resting-place or a pasture among its leaves, and it may even be said to be shunned by its own species, for it usually grows year after year singly, in the same place, without a companion near it.

The root of this plant is a thick tap, deeply plunged in the earth. Its stems grow about two or three feet high, and produce from their forks the solitary nodding blossoms. The leaves are dull green, and pretty constantly in pairs on one side of the stem, as if they had been half torn from their sockets, and misplaced in the setting. They are unequal in size, have a soft almost greasy feel, and are in form not unlike an egg cut through lengthwise, but sharper. In each of the bell-shaped flowers are five stamens (*b*) adhering to the sides, and a roundish two-celled ovary (*g*), with one style (*c*), many ovules, and a kidney-shaped hairy stigma (*d*), with a pair of blubber lips. The border of the corolla is regularly cut into five divisions. As soon as the flower drops off, it is succeeded by a green ball (*a*), filled with small seeds (*f*); this as it swells, becomes distended with deep purple juice, till at last it grows into a fruit, succulent, sweetish to the taste, tempting to the eye, and not unlike a black cherry (*e*).

In Latin it is called Belladonna, a word signifying *Fair Lady*, and first applied by the Italians. The learned Bodæus a Stapel, says it obtained this name, because people took a potion prepared from it in order to procure pleasant dreams, of which handsome women invariably formed a part. But its true history is that a cosmetic was once prepared from it. Distilled Dwale-water was said to remove freckles, and to render the complexion fair and white. But it has long been forgotten, the gentle sex having discovered that "le meilleur de tous les cosmétiques est une vie sobre et régulière; il conserve la santé, et la fraicheur qui en est l'expression." We now call it the Deadly Nightshade, but the Germans term it *wolf's cherry*, and *devil's berry*, and thereby point out how much it is to be shunned.

These names reveal its nature. It is a fatal poison in every part—berries, leaves, stem, and root; and the first are a fruitful source of fatal accidents. Half a berry is said to have caused death. Hence the fruit has been occasionally used as an intentional poison. The old chroniclers tell of a legion of Danes having been feasted by the Scotch, who finished them off by a mess of dwale from which they never woke; a German case is recorded of death having been caused by crushing the berries in wine; and an old woman is said to have killed a person by a potion prepared by boiling the flower-buds in water.

Accident, however, is more commonly the cause of injury from these berries. They are gathered in wild places by ignorant people, who think no ill of a fruit so fair. A French writer mentions an instance of 150 soldiers having been poisoned near Dresden; and less extensive instances occur frequently, of which we have at this time an example, in the case of a man now lying in prison to take his trial for poisoning persons in London, by selling the berries for tarts.



ATROPA BELLADONNA, OR DEADLY NIGHTSHADE.

Of these cases, phrenzy is a symptom; persons eating them become maniacs in a few hours; and this quality is characteristic of the whole plant, for when Shakspere called the deadly nightshade the "insane root," he only expressed poetically its well-known properties. "Even the dried root produces insanity," are the very words of Haller. Hence the names of the old herbalists, who called it the mortiferous, somniferous, or furious Solanum.

It is, however, certain, that some constitutions are able to resist this poison much better than others. It seems, doubtful, indeed, whether any effect at all is produced by small quantities upon some people. Haller lays it down as a rule, that three or four may be eaten without danger; and he asserts that he has seen a larger number swallowed with impunity by a medical student of Cologne, named Simon. A Danish gardener once employed near London, is said to have habitually swallowed a berry when annoyed by the impertinencies of his companions; and a case is quoted by Dr. Christison of a French lad who ate a pound of the berries before going to bed, and nevertheless recovered, although he was not subjected to medical treatment till the next morning. These facts give some colour to the assertion of the man now awaiting his trial, that he did not know the berries to be poisonous, because he had eaten them himself.

But how deplorable it is that the population of a city like London should be so profoundly ignorant as not to know these berries when offered for sale. We hear of no policeman stopping Hillard's trade; indeed it was at first supposed that they were sloes that he was selling; even the reporters in the police-courts seem to have known no better. Would it not be as well if as much botany were introduced into our national schools as would prevent such fatal consequences as these? A very little instruction would render such mistakes impossible.

ON PIGMENTS.

BY DR. J. A. STOECKHARDT.

(*Continued from page* 140.)

YELLOW PIGMENTS.

XIV. **Chromate of Lead** occurs in many yellow and orange-coloured shades, under the names of *chrome yellow*; *Paris, Leipzic, Zwickau, Gotha, Cahlaer, Altenburg, Cologne, citron,* and *new yellow;* and as *orange chrome, King's and Emperor's yellow.* The *chrome yellow* is obtained by the decomposition of a salt of lead (*e. g.* of the acetate, nitrate, or carbonate of lead) by means of the bichromate of potash. If we use subacetate of lead, or if the already formed chrome yellow be deprived of a part of its chromic acid by a solution of caustic potash, or milk of lime, orange chrome is formed. With a still smaller proportion of chromic acid the latter becomes *chrome red.* A very beautiful pigment, which can be produced in all hues, from the purest citron yellow to almost cinnabar red. It forms usually a lumpy powder, sometimes also square or irregular loosely connected pieces, which readily communicate their colour to whatever they touch. The intense tint which the chromate of lead possesses, admits of its being mixed with a numerous proportion of white substances; thus, for example, the commoner sorts of *new yellow* contain often only 10-12 per cent. of it, and still have a very fine yellow hue. It has from this reason become so universally used, that the formerly used yellow covering colours—as for example, the *Kassel* and *Naples yellow,* and *orpiment*—have been entirely given up. It is used as an oil and water-colour; but as a lime-colour it cannot be used, as it is decomposed and loses its colour by alkalies and alkaline earths. Some manufacturers make twenty sorts of it. Price from 2½ to 40 gr. per lb.

XV. **Oxide of Lead-Chloride of Lead** is known under the names of *Kassel, mineral, Turner's, chemical, Montpellier, Paris,* and *Veronese yellow*

This combination is produced by mixing together litharge or minium with sal ammoniac, or by saturating finely ground oxide of lead with a solution of common salt, and carefully heating the washed white chloride of lead. It occurs in trade either solid in heavy metallic lumps, of a grayish yellow colour and foliaceous fracture, or ground as a powder from a golden to a sulphur yellow colour, generally without further admixtures. It is an oil, water, and lime-colour. Price from 6 to 8 gr. per lb.

XVI. **Antimonite of Lead** is called in trade *Naples yellow* or *Neapolitan earth*, and is obtained from minium and oxide of antimony, or roasted antimony, or from emetic tartar and nitrate of lead; also from antimony, minium, and oxide of zinc by carefully heating, then grinding and washing. It forms a faint reddish delicate powder, and its colour is of great durability; but since the cheaper and more brilliant chrome yellow pigments have been invented, it is only applied in fine oil painting and as an enamel-colour. There are few sorts of it only. Price from 12 to 30 gr. per lb.

XVII. **Sulphuret of Arsenic** is called *rauschgelb*, *auripigmentum*, *orpiment*, *King's*, *Persian* and *Chinese yellow*, and seldom *New or Spanish yellow*. Native orpiment is found in solid or crystalline masses of a foliaceous or radiating texture, metallic brilliancy, and of a yellow or orange colour. Artificial orpiment is obtained by the sublimation of sulphur and white arsenic. It has a glossy appearance and a greenish yellow colour. If ground the first forms a pleasing reddish yellow powder; but the powder obtained from the artificial is of a lighter hue, and not so fine though more poisonous, as it always contains varying quantities of free arsenious acid, which, as some experiments have shown, may even amount to 60 per cent. Most manufacturers now sell instead of it chrome yellow, and it is to be wished that they would all follow this example. It is used as an oil and water colour; but most frequently as a lime colour, as it mixes with lime without changing, which is not the case with chrome yellow. On account of the sulphur which it contains, this colour cannot be mixed with white lead, Schweinfurt green, and some other metallic colours without turning black. There are only a few sorts of it, price from 5 to 30 gr. per lb.

XVIII. **Hydrated Oxide of Iron**, with *clay*, *lime*, &c., is sold in numerous shades under the following names:—*Yellow ochre*, *gold ochre*, *yellow earth*, *yellow clay*, *Kollerfarbe*, *yellow terra de Siena*, *yellow house colour*, *Chinese yellow*, *fine yellow*, *Cahlaer* or *Kassel*, *gold yellow*, *Chamois*, *Strieyau*, *Lemnian earth*. One of the most common earth colours, which is sold either in a crude state, just as it is dug out of the ground, or washed. By a gentle heat the colour can be heightened; by a strong heat it yields yellowish red, brown, and red colours. Price from 1 to 30 dollars per cwt.

XIX. **Vegetable Yellow** with alumina and gypsum, is called *Yellow lake* (Schuttgelb) or *paillelac*. It is obtained from such substances as contain a yellow colouring matter, which does not turn brown by alkalies; *e. g.* weld or quercitron, by boiling them in water and adding alum and chalk (in a pasty state) to the decoction. The half dried mass is generally formed into a sort of cakes, and furnishes a light yellow earthy paint, which is chiefly applicable for painting rooms. Price from 4 to 8 dollars per cwt.

XX. **Gamboge** is the dried yellow milky juice of several East Indian trees. It is an opake yellowish brown gum-resin, having a conchoidal fracture and fatty lustre. This pigment is of a resinous nature, but is easily dissolved by water, forming a yellow milky fluid, which dries up and forms a glistening light yellow transparent varnish. It is frequently used as an organic colour for yellow colours, varnishes, &c. Price from 40 to 50 gr. per lb.

XXI. **Yellow Colouring Substances** are also found in many plants, of which the following are introduced in commerce:

A. Turmeric, a cylindrical knobby root; externally ringed and yellowish gray: internally orange yellow. The powder has an intense brownish yellow colour. Turmeric abounds in resinous yellow colouring matter, which can, therefore, only be extracted by spirit of wine or oil. Alkalies change its yellow colour into a deep reddish brown. It is used for dyeing wool brown; for giving a yellow colour to varnishes, quills, wood, &c.; and in chemistry as a test for alkalies, &c.

B. Yellow Wood (Fustic).—The pale yellow wood of the trunk of a tree growing in the West Indies. There is another sort, which is known by the name of Hungarian fustic. Both kinds contain a rather durable colouring substance, which is used in dying for producing yellow, green, brown, and black tints. Alkalies colour it brownish red.

C. Quercitron, a nankeen yellow powder, mixed with fibres, is obtained by mechanically grinding the bark of the North American dyer's oak. Water copiously extracts the yellow pigment contained in it, and which is much valued for dyeing. Alkalies change it to reddish yellow.

D. Weld consists of the dried leaves and stalks of the Reseda luteola, which in many places, chiefly in the South of France, is used for dying silk. The weld yellow is soluble in water, and does not become brown by means of alkalies.

E. Yellow berries, yellow or Avignon grains, Persian berries, are the green fruits of a Rhamnus gathered in an unripe state and dried. The Persian are larger and richer in colouring matter than the French. The colour is extracted by water and is much used for printing. Alkalies change it to orange yellow.

F. Saffron, the dried yellowish red stigmata of a Crocus. Although it is very rich in a yellow colouring matter, soluble in water, it is still so fading that it is only used for colouring pastry, &c. Alkalies have no effect on it.

G. Arnotto (Roucou). The better sort comes in commerce in the form of a brownish red soft dough; the more inferior sort in a much drier condition in the form of cakes. It is contained in the fruit of a species of Bixa, in the form of a reddish yellow meal, which is separated from the vegetable fibre by fermentation, or by merely washing with water. The predominating colouring matter of the arnotto is not soluble in water, but in a weak solution of potash, which is made use of to dye cloths, gives a yellowish red colour to wood, and in England to cheese.

Barberry root, saw-wort, greenweed (*Genista*), *onions,* and *willow leaves* are very little used for producing yellow colours.

[The author has omitted to notice *Purree,* or *Indian Yellow.* See *Pharmaceutical Journal,* vol. iv., p. 417].

OBSOLETE YELLOW PIGMENTS.

Molybdenum yellow was *molybdate of lead.*
Yellow mercury or *turpeth mineral* was a *subsulphate of mercury.*
Cadmium yellow was *sulphuret of cadmium.*
Iodine yellow was *iodide of lead.*
Zinc yellow was *impure oxide of zinc* (also the *chromate of zinc*).
Yellow ultramarine or *Gelbin* was *chromate of baryta.*

For *printing* and *dyeing* a *yellow* colour, was produced from *chrome yellow, hydrated oxide of iron* (nankeen colour), *nitric acid* (mandarining of silk), *weld, fustic, quercitron, yellow berries, turmeric, &c.* An *orange* colour was produced from *orange chrome, arnotto,* and from *madder red,* or *lac dye,* &c., mixed with yellow. *Sulphuret of arsenic* and *sulphuret of antimony* are no longer used either for dyeing or printing. Ivory is dyed yellow by means of *chromate of potash* with a *salt of tin;* or with a *decoction of fustic,* with *arnotto, quercitron,* or *turmeric.* The transparent yellow colour so frequently met with in wooden toys is obtained by boiling them in milk and turmeric root.

Paper is dyed yellow or orange principally by *chrome yellow* and *orange chrome, ochre*, and mixtures of the just mentioned yellow substances with *minium*. *Yellow lake* is but seldom used.

Colours for confectioners, are *Saffron, turmeric, yellow berries, ochre, arnotto*, and *yellow lake*. For *liqueurs: Saffron, safflower, turmeric*, and *arnotto*.

For *enamel colour* there are used *sulphuret* and *chloride of silver, compounds of antimony* and *uranium*, and *oxide of iron*.

[*To be continued.*]

EXPERIMENTS ON MESSRS. T. AND H. SMITH'S ANTIDOTE FOR PRUSSIC ACID.

M. Larocque has lately been engaged in performing some experiments, with a view of ascertaining the efficacy of the mixed oxides of iron as an antidote for prussic acid (*Pharmaceutical Journal*, vol. v., page 35), and he has arrived at the following conclusions :—

1. That the alleged antidote has no effect whatever when prussic acid has been taken in the anhydrous state. The rapidity with which this poison causes death is too great.
2. The same objection applies to its use when the anhydrous acid has been swallowed diluted with its volume of water.
3. That good effects may follow its use when it is employed at the commencement of symptoms, and the dose of the medicinal acid is about from sixteen to twenty-five grains.
4. That when the medicinal acid is diluted with a large quantity of water, there is, in most cases, great hope of recovery.
5. That chlorine increases the efficacy of the antidote.—*Gazette Medicale* and *London Medical Gazette*.

ON PELOPIUM,

A second new metal discovered in the Bavarian Tantalite.

BY PROFESSOR H. ROSE.

In a former paper, on the composition of the so-called tantalic acid, which occurs in the columbite of Bodenmais, in Bavaria, I showed that it consisted of two acids, one of which differs so decidedly from all known metallic oxides, that I did not hesitate to regard it as the oxide of a new metal, which I named *Niobium*.* I did not then enter into a description of the second acid, which occurs in company with the niobic acid, but merely observed that it possessed great similarity to the tantalic acid procured from the Finland tantalites.

The separation of the two acids according to the method I formerly described was exceedingly troublesome and tedious. After I had suspected a peculiar substance in the so-called tantalic acid from columbite, and had vainly attempted in various ways to isolate it, I succeeded in effecting this only approximatively on converting the acid into chloride, by mixing it with charcoal and passing a current of chlorine over the heated mixture. I obtained a yellow readily fusible and very volatile chloride, and a white infusible less volatile chloride. Both were converted by water into metallic acids, which were not dissolved by the hydrochloric acid formed, but separated on boiling, and could easily be freed by washing with water from every trace of acid; but when the acid from the white infusible chloride, after I had separated it as well as possible from the yellow one, was again mixed with charcoal and treated with chlorine, I constantly obtained yellow and white chloride; less, it is true, of the first than when the mixture of the two acids, as they occur in the mineral, was employed; but even when the operation was very frequently repeated with the acid from the white chloride, it was not possible to obtain by this method a pure white chloride free from yellow.' I observed, however, that the white chloride was only partially sublimed. When it was separated as much as possible from the yellow chloride, and by sublimation also from a white non-volatile residue, it at last afforded an acid which on treatment with charcoal and chlorine yielded a tolerably pure, white, wholly volatile chloride, the chloride of niobium. The white fixed residue yielded with charcoal and chlorine a large quantity of yellow chloride; and after removing this by sublimation, again left a white non-volatile residue, which, on being again subjected to a similar treatment, afforded the same products.

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* See vol. iv., page 571, of this Journal.

On comparing this behaviour of the yellow chloride with that observed on treating a mixture of pure tantalic acid and charcoal with chlorine, I obtained a perfectly similar yellow chloride and a white non-volatile residue; but the quantity was far smaller, and its production could be entirely avoided if, in the preparation of the chloride of tantalium, every trace of humidity and atmospheric air had been carefully excluded. Moreover, the sublimed yellow chloride from the Bavarian mineral very much resembled the chloride of tantalium. This similarity likewise extended to the acids prepared from the two chlorides; they behaved so much alike, that it was only after long continued investigation properties were discovered by which they might be separated.

The yellow chloride from the Bavarian mineral differs, therefore, principally from the chloride of tantalium by its leaving a white non-volatile residue on its production, or rather on its volatilization, at a high temperature. This residue consists principally of the acid which may be obtained from the yellow chloride by decomposition with water.

The acid of the yellow chloride from the Bodenmais mineral, which is contained in it along with the niobic acid, I have named *pelopic acid*, and the metal *pelopium*, from Pelops, the son of Tantalus, and the brother of Niobe; to point out, at the same time, by this name, not only its simultaneous occurrence with the oxide of niobium, but more particularly the very great resemblance of pelopic acid to the tantalic acid from the Finland tantalites. This similarity is, indeed, more perfect than exists between the combinations of any other two simple metals: it is so great, that it was only after a long-continued and most minute investigation that I could decide upon publishing the results I had obtained. The combinations of niobium are, on the contrary, very different from those of pelopium or tantalium.—(*Extracted from the original paper in the Chemical Gazette.*)

ON LOLIUM TEMULENTUM.

BY PROFESSOR PFAFF.

The seeds of Lolium temulentum were examined in order to discover the alkaloid on which its poisonous qualities have been supposed to depend. No trace of it, however, could be found. By distillation with water two kinds of etherial oil were obtained; one specifically lighter and the other specifically heavier than water, of a colour like clear water, and possessing a striking smell of the fusel-oil of spirit.—*Buchner's Repertorium*, Band xliii., p. 201.

ON THE CHEMICAL DISTINCTION BETWEEN SOUND AND DISEASED POTATOES.

BY PROFESSOR PFAFF.

The chief difference between partially diseased potatoes and sound ones, consists in a relatively smaller proportion of starch and albumen contained in the former. The starch is perfectly normal in its quality, and yields, by means of sulphuric acid, starch sugar, quite equal to that obtained from sound potatoes. The albumen, however, has suffered a decided change, for, immediately on coagulating, it acquires a dark colour. The juice of both diseased and healthy potatoes contained equal proportions of solanina. —*Buchner's Repertorium*, Band xliii, p. 200.

ON KIEN, OR NATIVE CHINESE CARBONATE OF SODA.

BY DR. THEODORE MARTIUS.

On August the 6th, 1845, the vessel Cambyses, brought to Hambro' (*Hambro'-Altona* report of imported goods, No. 158) besides various other new drugs, some Chinese soda. Considering the uncommonly low price at which this article is sold with us, it can hardly be supposed that any profit could be derived from importing soda from China to Hambro', and it, therefore, occurred to me that the soda in question was perhaps Chinese native carbonate of soda or trona. Believing that some observations on this subject may be interesting I have communicated the following remarks concerning *Kien*, or native carbonate of soda from China.

Grill, in the *Abhandlung der schwedischen Akademie der Wissenschaften*. (Bd. 34, S. 165), says, "During my seven years' residence in China many things attracted my attention, and I hope on my return to procure much pleasure and profit to natural historians. That I may further enjoy the advantages of my residence there I continue to keep up a correspondence with that country, and one of my correspondents, Father Joseph Vitalis Kuo, a native of China, who has studied in Naples, a Catholic priest, and at present missionary in the province of Hansi, or in that part of China which borders on the Thibetan Tartary writes me as follows:—In the kingdom of Hansi (which is situate in Thibetan Tartary) is found an earth which resembles the Kien, or what is the same, the Chinese soap. Three feet beneath this is found a natural white salt, very hard, surrounded by large turfs (*Erdrasen*) and incrustated with the same. It is general in those places where the surface of the earth is white, and the earth beneath loose, that is found salt, *kien*, or a sort of natural borax, which can easily be recognised by the taste. If this earth tastes of saltpetre then saltpetre is found beneath; if of common salt, borax, or kien, then salt, borax, or kien is found. If such earth be boiled, that salt is extracted of which it tasted prior to boiling; but borax is found pure by nature and cannot be obtained from the earth by boiling (?)"

From this description we may conclude that these places must contain a large quantity of different kinds of salts, and also that saltpetre (probably nitrate of soda?) is found in a native state.

I did not know how to make a better use of the above-mentioned kien than to give samples of it to the Warden Von Engeström, in order to make experiments with them. Of these the following are the results :—

The piece of kien that was given to me was externally white, like the whitest hair powder, and dusty, so that it strongly coloured whatever it touched. It had been lying for some time in a cold room and remained equally dry—a sign that it attracts no moisture from the air. This whiteness and looseness appears to arise from efflorescence, for when the piece was broken, it was internally almost moderately hard and grayish yellow.

The effloresced parts, as well as the fresh fragments, tasted like common mineral alkali; but when fresh fractured, it smelt like soap. From this circumstance it has probably received in China the name of *kien*.

It dissolved in warm water with the exception of a very small quantity of fine earth, which render the ley not more cloudy than thin soap-suds.

During the solution, a little froth appeared on the surface, the ley smelt fatty, and felt between the finger like a solution of common mineral alkali.

The ley filtered clear and brown. It coloured violet juice green, and precipitated whatever had been dissolved by acids. The ley of kien crystallized by itself like common mineral alkali. The mother liquor repeatedly evaporated to yield crystals as long as any could be obtained. In all these crystallizations no other salt but mineral alkali was obtained.

The ley of kien was further saturated with sulphuric, nitric, muriatic, and vegetable acids. The mixture remained clear. They were evaporated so as to form crystals; and such salts were obtained as are usually procured from mineral alkali by means of the above-mentioned acids. Whether the Chinese soda imported into Hambro' was kien, or real soda obtained through combustion of sea-plants, examination will probably show.—*Buchner's Repertorium*, No. 126.

ON THE PREPARATION OF MANNITE.

BY M. G. RUSPINI.

PRINCE L. BONAPARTE, having observed that an aqueous solution of mannite yielded on cooling, much larger and more regularly formed crystals than those obtained from an alcoholic solution, has profited by this observation, in making known the following economical method of preparing mannite:—

Treat the best manna with boiling alcohol, allow the mannite to crystallize; recover nearly the whole of the spirit by pressing it out from the mannite; then dissolve the mannite in boiling water, from which it will separate, on cooling, in beautiful colourless crystals.

M. Ruspini attributes the high price which mannite still bears, notwithstanding the adoption of the above process, to three causes:—first, the loss of a part of the spirit used; secondly, the small product obtained; and, thirdly, the necessity of using the best manna.

He proposes to obviate these obstacles to its economical preparation in the following manner:—

Melt six pounds of common manna (sorts) over the fire with about half its weight of rain water, in which the white of an egg has been previously beaten; boil them together for a few minutes, and then strain the mixture through a linen cloth. The strained liquid will solidify on cooling. It will present the following characters: it will be a pale brown mass, which, on triturating it, will become pulpy, and somewhat similar to common honey.

After having brought the manna into this state, M. Ruspini has two different processes for separating the mannite.

First Process.—Submit the manna, prepared as above described, to strong pressure in a cloth, then dry the granular and nearly white mass which remains in the cloth, and reduce it to powder. The liquor which has been separated by pressing will be dark coloured. Dissolve the powder in spirit, sp. gr. .898, and when at a boiling temperature, add a little animal charcoal, and immediately filter it through paper into a dish, in which the mannite may crystallize as the liquor cools. In this way, thirty ounces of white and pearly crystals will be obtained.

The spirit which may be separated by filtration, and by slightly pressing the crystals, may be put on one side for another operation, or distilled to separate the mannite still held in solution, but as this latter is always coloured, it will be necessary to redissolve and decolourize it, or to use it in the next operation.

Second Process.—Submit the prepared manna to pressure, as in the first process ; but instead of drying the pressed cake of mannite, and treating it with spirit, mix it with its own weight of cold water, and again press it. The mass thus obtained will be sensibly less coloured than it was before this second purification. The liquor resulting from the second pressing may be added to that of the first pressing. The pressed cake is now to be dissolved in boiling water ; some animal charcoal is to be added, and the mixture is then to be filtered into a porcelain dish placed over the fire, and the clear solution evaporated to a pellicle, and then put to crystallize.

The crystals thus obtained are much larger than those formed in the alcoholic solution. They are truncated quadrangular prisms, perfectly white and transparent.

M. Ruspini does not crystallize the mannite intended for use in medicine, but supplies it in powder. He merely dissolves the pressed cake of mannite in as much boiling water as is just sufficient for its solution, and instead of adding charcoal, and filtering it, he leaves it to solidify into a mass on cooling, then washes it on a cloth strainer, and slightly presses it. He thus obtains a confused crystalline mass, which being dried and pulverized, forms his *officinal mannite.*

Note to the above, by M. Dalpiaz.

I have repeated M. Ruspini's processes, and have obtained the results described. His second process is as easy and perfect as it is simple and ingenious.—*Journal de Pharmacie.*

ON THE CHANGE WHICH TINCTURE OF IODINE UNDERGOES WITH KEEPING.

BY M. GUIBOURT.

Extracted from the Bulletin de l'Académie de Medicine.

I WISH to direct the attention of the Académie to the variations which the alcoholic tincture of iodine presents in its constitution and therapeutic effects, according to the length of time which has elapsed since its preparation.

I will commence by taking a retrospect of the use of iodine since Coindet proposed it as a remedy for goître. The alcoholic tincture was at that time prescribed in doses of four, six, or eight drops two or three times a day, in some aqueous liquid. But the iodine is precipitated on adding the tincture to water, the solid particles of iodine being held in suspension in the liquid ; and these being deposited on the coats of the stomach, caused active irritation, and probably small local ulcerations. Thus it was found that persons attacked with goître, but who in other respects were in good health, after commencing the tincture of iodine, experienced pains in the stomach, loss of appetite, bad digestion, and wasting, which gave rise to the opinion, prevalent at that time, that iodine could not be used for reducing goître, without its producing, at the same time, a general emaciation ; that it diminished, in particular, the breasts ; and that when prescribed for young females, it retarded the development of those organs designed for them by nature. Coindet, with the view of obviating these objections to the remedy, substituted for the alcoholic tincture, a solution of iodine in iodide of potassium, which giving no precipitation of iodine when added to water, acted as a mild and uniform stimulant to the stomach, and thus improved the digestive functions. Thus from that time, not only have all the objections which were previously urged against the use of iodine ceased to exist, but on the other hand, it has been found, that weak and debilitated patients improved in appetite and in condition, and young females acquired improved colour, increased development of the breasts, and regularity of the natural economy, in proof of the beneficial action of the medicine. I have taken a review of these circumstances, which must be in the recollection of most medical men, in order to establish the great difference which exists between the action of iodine when administered in the solid state, and in the state of perfect solution. I now pass to the examination of the mixture employed by M. Velpeau in the treatment of hydrocele.

I will first consider the case of tincture of iodine recently prepared, such as that which I present to the Academy, which was made three days ago, according to the directions of the Codex, by dissolving, without heat, one part of iodine in twelve parts of spirit, sp. gr. .848. If this tincture be mixed with twice its weight of water, the iodine will be almost entirely precipitated in the form of black particles, easily separating by repose, and the supernatant liquid will be almost colourless. In what way should this mixture be taken? If the clear and transparent part only be taken, it would probably produce only a slight stimulating effect, due principally to the spirit. If, on the other hand, the liquid be shaken up before taking it, the solid particles of iodine would be deposited on the coats of the intestinal canal, and would produce a degree of irritation that may not be free from danger.

I will now consider the case of tincture of iodine which has been prepared four or five months. The following is the change which has taken place during this interval of time. One part of the iodine takes hydrogen from the alcohol to form hydriodic acid, which unites with another portion of iodine to form ioduretted hydriodic acid, which gives no precipitate with water. On the other hand, the alcohol probably replaces the lost hydrogen by iodine, forming another compound not precipitated by water. It is found, therefore, on mixing this tincture, four or five months old, with twice its weight of water, that there still is a precipitation of iodine, but that the precipitate is three or four times less in quantity than that afforded by the recently made tincture. The supernatant liquor, in this case, however, will be much more highly coloured than in the other, and it is unquestionable that the effects of the mixture, whether it be given clear or with the precipitate, would be different from those of a similar mixture made with the recently prepared tincture.

Lastly, if we take tincture of iodine that has been prepared for a year or a year and a half, it will scarcely cause any precipitation with water, and its medicinal effects will be different from those of the tincture in either of the cases previously considered.

I conclude from these facts, to which I have long had my attention directed, that the alcoholic tincture of iodine is a medicine liable to variations in its composition and in its effects, and that it ought to be replaced by a somewhat similar mixture, which should be made extemporaneously. Such, for example, as the following, in which the whole of the iodine would remain in solution, forming a homogenous mixture :—

℞ Iodine, 5 parts.
Iodide of potassium, 6 parts.
Rectified spirit, 50 parts.
Distilled water, 100 parts.

Triturate the iodine, iodide of potassium and part of the water in a mortar; then add the spirit, and the remainder of the water.—*Journal de Pharmacie.*

ON THE ANALYSIS OF THE RESIN OF CERADIA FURCATA.

BY M. C. GERHARDT.

The plant *Ceradia furcata*, from which this resin exudes, somewhat resembles coral in aspect, and hence is called the coral plant; it grows on the coast of Africa, opposite the island of Ichaboe.*

The resin has an amber colour, and a smell resembling that of olibanum. Its specific gravity is 1.197. It has been analysed by Dr. R. D. Thomson of Glasgow, with the following result:—

Carbon	80.1
Hydrogen	9.8
Oxygen	10.1
	100.0

Dr. Thomson has deduced from these results, the following formula: $C_{10} H_{14} O$, or $C_{40} H_{56} O_4$, but in this formula, the hydrogen is taken at 9.3. Probably the formula $C_{20} H_{30} O_2$, in which the hydrogen is taken at 9.9, would be nearer the truth, and this corresponds with the formula for the resin of the pine.—*Compte rendu des Travaux de Chemie*, in the *Journal de Pharmacie.*

DOUBLE CHLORIDE OF MERCURY AND QUINA.

DERMOTT.

This new salt has been successfully used as a remedy for lupus. It is prepared in the following manner :—

Dissolve, separately, one part of bichloride of mercury, and three parts of hydrochlorate of quina, in the smallest possible quantity of water. Mix the two solutions; the double salt will separate in acicular crystals.

Dr. Hamilton has administered this salt in pills, made according to the following formula :—

℞ Chloride of mercury and quina, gr. j.
Powdered Opium, gr. ¼.
Crumb of bread, q. s. Make into 30 pills.

Take one three times a day.

Thus administered, it is said speedily to produce salivation, when its administration must be stopped for a time, and then again repeated. It deserves the attention of medical men.—*Journal de Pharmacie.*

ON THE ADULTERATION OF IODINE.

BY M. RIGHINI.

The author having received some iodine from a merchant at Milan, the appearance of which excited his suspicion, he submitted it to examination.

It was hard and compact, and attracted moisture when exposed to the air. It dissolved entirely in alcohol, and left no residue when treated with iron-filings and water.

On submitting some of it to sublimation, a residue was left, which presented the characters of chloride of calcium. Further examination proved that this salt was present to the extent of 25 per cent.—*Journal de Chemie Medicale.*

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* There is a specimen of this plant in the Museum of the Pharmaceutical Society, 17, Bloomsbury Square.

ON FALSE BATAVIAN MUSK-PODS.

BY DR. E. MARTINY.

Artificial musk-bags have lately been imported from Batavia into Hamburgh. Dr. Martiny describes them as follows:—The size of the bag as well as its shape is very nearly that of a walnut, but somewhat flattened. Externally the bag is covered with very fine hair, except at a small spot, which covers the flattened surface. These hairs are from ten to fifteen lines long, very thin, soft, pale grayish-white at the root, and brownish-gray at the point. They run regularly in one direction, cover smoothly the convexity of the bag, and are likewise cut off at the top near the flattened surface. The hair is as soft and brittle as that of the officinal musk-bag, but has not the undulating curve of the latter. Near the flattened surface the skin is repeatedly folded, and within these folds is also covered with hair. It is, therefore, quite clear that a piece of the common animal's skin had been fastened around some round body, and had been closely cut off at the top. On further examination it was observed that these bags had neither the usual opening of the musk-bag, nor the remains of the penis. After the bag had been kept for one night wrapped in a cloth moistened with water, the cutaneous covering became softened, and the folds near the flattened surface opened, so that it was possible to examine the interior. The skin was about one line in thickness; the cutis (*Lederhaut*) was transparent, fresh, and showed no trace of decomposition, except that the hairs readily fell out. This skin is perhaps taken from some of those musk animals found in the East Indies (*Moschus Javanicus, Kuntchil, Meminna, Pygmaeus*) but which have no musk-bag. The cavity is filled up with some solid, light brown vegetable substance, having a faint smell and strong astringent taste. It is soluble neither in water nor in ether, but partly so in spirit of wine and in dilute muriatic acid. Chloride of iron, added to the light brown spirituous solution, gave it a blackish-brown colour; solution of caustic potash dissolved the substance perfectly, and formed a dark brownish-red solution, but the colour was destroyed again by nitric acid.—*Pharm. Central Blatt.* June 13, 1846, No. 25.

TEST FOR STRYCHNIA.

BY MACK.

Marchand has shown in the *Journal de Pharmacie et de Chimie* (1843, Sept., p. 200) that when strychnia is rubbed with peroxide of lead and sulphuric acid containing some nitric acid, it is immediately oxidized and a blue pigment formed, which becomes violet, then gradually red, and, after a few hours, yellow. This test is so delicate that $\frac{1}{1000}$th of a grain of strychnia can be discovered by it. But as peroxide of lead is not usually found in chemists' shops, Mack substituted peroxide of manganese, and obtained similar results. With this test strychnia can be detected in powdered nux vomica. If diluted nitric acid be applied to the powder or to strychnia, and to these be added some finely powdered oxide of manganese and afterwards a few drops of oil of vitriol, a dark blue colour is instantaneously produced; but it soon changes to violet, then to pink, and at last to yellow. On heating the mixture the phenomena occur much more rapidly. With brucia, morphia, narcotina, and quina no change was produced; and with strychnia, the blue, violet, and red colours could not be produced when chlorate of potash was substituted for peroxide of manganese; because, probably, the chlorine effects other changes in the organic matter, not oxidizing, but rather dehydrogenizing it.—*Buchner's Repertorium*, second series, vol. xlii.

RECOVERY FROM A LARGE DOSE OF NITRE.

In a recent number of the *Provincial Journal*, Mr. Gillard reports a case in which a man swallowed two ounces of nitrate of potash by mistake for Epsom salts. In about five minutes he felt a burning pain in his stomach, and this was immediately followed by sickness. Some mustard was given to him, which caused copious vomiting, and by the aid of warm water the stomach was emptied. He still complained of a burning pain in the epigastrium when Mr. Gillard saw him. Magnesia, tincture of opium, and diluents were given to him, a full dose of castor oil. In four days the man completely recovered, and returned to his work.

The recovery was most probably due to the early exhibition of an emetic, and the ejection of the irritating salt from the stomach.—*Medical Gazette.*

SOLUTION OF SHELL-LAC PURIFIED BY CHARCOAL.

BY ELSNER.

For polishing white woods there has been hitherto employed a spirituous solution of shell-lac, bleached by chlorine. Without taking into consideration the relatively high price of this preparation, this solution is objectionable from the circumstance that even a very small per centage of chlorine contained in it, may act injuriously—thus it may tarnish inlaid metallic ornaments, &c. In order, therefore, to decolorize shell-lac by another method, Elsner dissolved, by the aid of heat, shell-lac in an equal quantity of spirit of wine of 85 per cent. The fluid was digested for some days with granular animal charcoal, and at the same time was exposed to direct daylight. It was then filtered through gray blotting paper in a warmed funnel. The solution of shell-lac thus purified with bone-black, has certainly a brownish-yellow colour, but it is perfectly clear and transparent; and appears, when diluted with spirit of wine, of a slight brownish-yellow tint. In this state it can be employed for polishing the white woods.—*Pharm. Central Blatt.* June 27, 1846, No. 28.

REMEDY FOR THE TOOTH-ACHE.

The following application is said to soothe the irritability of the nerve of a decayed tooth, without occasioning any inflammation in the periosteum or in the gums, as is generally the case with the remedies used:

Powdered alum is made into a paste with nitrous ether, and a small quantity of this is put into the hollow of the decayed tooth. It is sometimes found serviceable to spread some of this paste over the gums, when they are congested and painful.—*Bull. de Therap.*

[This remedy has been long used in this country.—Ed.]

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

The Sixteenth Anniversary of this society has just been held at Southampton, where upwards of six hundred Members and Associates, and nearly two hundred ladies, assembled, under the presidency of Sir R. J. Murchison. There were several foreigners of scientific eminence present, of whom we may mention, Professor Oërsted, Schönbein, Heinrich Rose, Matteucci, Agassiz, Middendorf, and Forchammer. The Association was also honoured by the presence of His

Royal Highness Prince Albert, who attended one of the general meetings, and made a flying visit to the different sections on one of their days of meeting.

The Chemical section was presided over by Dr. Faraday. Papers were read before this section by Mr. Osborne, on the Action of the Water in the Suburbs of Southampton on Lead Pipes; by Mr. West, on the desirableness of publishing the Processes adopted, as well as the Results, of Chemical Analyses; by Mr. Hunt, on the Actinograph; by Dr. Leeson, on Crystallography, and a new Goniometer, illustrated by apparatus and models; by Professor Forchammer, on comparative Analytical Researches on Sea-water; by Professor Oërsted, on the Changes which Mercury sometimes undergoes in Glass Vessels hermetically sealed; by Professor Rose, on a second new Metal (Pelopium) in the Tantalite of Bavaria (*see* page 180); by Professor Connel, on the Analysis of American Nemalite; by Dr. Percy and Professor Miller, on Crystalline Slags; by Mr. Mallet, on the Corrosion of Iron Rails in and out of use; by Dr. Daubeny, on Cavendish's Experiments respecting the production of Nitric Acid; by Mr. Gassiot, on the Electricity of Tension in the Voltaic Battery.

The Geological section was, as usual, the most numerously attended; and the excursion of the members of this section round the Isle of Wight, was among the most popular features of the week's entertainment.

Much interest was excited by the exhibition and description, at one of the meetings, of

PROFESSOR SCHÖNBEIN'S GUN COTTON,

Which is proposed as a substitute for gunpowder. No information, however, was given as to its real nature, or mode of preparation, which are at present kept perfectly secret, nor were the members allowed to examine it closely, lest they should get some clue to the secret. It is said to have the appearance of common carded cotton, to be exceedingly combustible, to possess an explosive power superior to that of gunpowder, and to have the advantages of exploding without smoke or residue, and to suffer no injury from being wetted, as it entirely regains its properties on being again dried. Sir J. Herschell, in alluding to this substance, said, "It might in the next generation arm mankind with the very wildest powers, by which they could tear up rocks, and almost call down lightning."

Some experiments are being made for our Government to determine the value of the *Gun Cotton* as compared to gunpowder.

The next meeting of the Association is to take place at Oxford, to commence on the 24th of next June, under the presidency of Sir R. Inglis.

CHEMICAL RAILWAY WHISTLE.

A SERIES of experiments have recently been made in the presence of Messrs. Cubitt, the civil engineers, and several other scientific and practical men, with the view of testing the efficiency of a new kind of railway whistle, the invention of Mr. Mowbray, of the firm of Garnett and Mowbray, of Paternoster Row.

It is well known, that the engine-driver of a railway train, is always provided with the means of sounding notice or alarm by a whistle attached to the steam boiler; but the guards, who are stationed at the rear of the train, have hitherto had no means of communicating with the driver, to give notice of accidents to any of the carriages, or of impending danger from behind. Mr. Mowbray proposes to remedy this defect, by supplying the guards with a whistle worked by means of compressed carbonic acid gas, in the place of steam. The apparatus employed, consists of a strong iron box, called the generator, containing broken pieces of marble, on to which hydrochloric acid is allowed to run, on turning a cock, and the gas, which is immediately generated, escapes under pressure, through the whistle.

It has been found on trial that the carbonic acid, under a pressure of six pounds to the inch, produces as loud a sound, as steam under a pressure of sixty pounds to the inch.

The result of the experiments has been satisfactory, and it is expected that these whistles will in a short time be adopted on all the railway lines.

NOTICES OF BOOKS RECEIVED.

Jahresbericht über die Fortschritte der Pharmacie in allen Landern im Jahre 1844. Herausgegeben, von Prof. Scherer, *in Würzburg*, and Dr. Wiggers, *in Göttingen*. Erlangen: 1845. Large 8vo, pp. 302. Woodcuts and plate.*

Canstatt and Eisenmann's valuable annual account of the Progress of the Medical Sciences in all Countries, is probably known to some of our readers. It is divided into six parts: One devoted to Biology, or Anthropology in its most extended sense; the second, including Medicine, Pathology, and Therapeutics; the third is on State Medicine; the fourth (the subject of the present article) on Pharmacy; the fifth, on Veterinary Medicine; and the sixth, on Surgery and Midwifery. To those interested in the progress of Medicine and its allied sciences, this collection is invaluable.

The fourth or Pharmaceutical portion of the work, is divided into four parts. The subjects of *Pharmacognosy* and *Pharmacy*, have been prepared by Von Wiggers; and those of *Pharmacology* and *Toxicology*, by Scherer.

The nature of the work does not admit of a formal review of it; and we shall, therefore, content ourselves with observing that it gives an excellent and faithful abstract of all the papers on Pharmaceutical subjects published, in all countries, during the year 1845, and illustrated when requisite by wood-cuts and plates.

Lists of all systematic works on Pharmaceutical subjects, published during the period referred to, have also been drawn up, and add to the value of the work.

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* [*Annual Account of the Progress of Pharmacy in all Countries during the year* 1844. Drawn up by Prof. Scherer, in Würzburg, and Dr. Wiggers, in Göttingen.]

TO CORRESPONDENTS.

H. A. — (1.) Tincture of Quinine. See vol. v., p. 528. — (2.) Wine of Quinine. Dr. Collier's formula is, Quinine ʒj., Citric acid x gr., Orange wine Oj.

A. T.—Sulphuric acid, which is discoloured by the presence of carbonaceous matter, may be rendered colourless by heating it in a glass retort, or flask, placed in a sand-bath, nearly to its boiling point.

G. R.—(1.) Essence of Cedrat is obtained from citron peel.—(2.) The botanical name of Celery is *Apium graveolens*.

X. Y. Z.—The adulterations of drugs are treated of in the works on Materia Medica, where more information will be found on the subject than is contained in any book exclusively relating to it.

"An occasional Reader."—The figures are wrong. The other part of the question has been repeatedly answered.

"Gallic Acid."—Citrate of iron is decomposed by bitter infusions containing tannin.

C. W.—We cannot recommend a work on the cultivation of bees — the subject is out of our province.

O. F. (Sunderland).—Gallic acid may be prepared by moistening powdered galls with water, and exposing it to the air for a few months. The tannic acid in the galls is thus converted into gallic acid, which may be dissolved out by water, and purified by crystallization.

The Patent Condenser.—We are informed by the patentee, that this apparatus is easily cleansed, by passing hot water or steam through the inner chamber, which completely deprives it of all flavour from previous distillation. In our last number, we expressed a doubt whether this could be effected so completely as in the case of an ordinary worm, on account of the inequalities of surface at the junction of the plates; but we are informed that no disadvantage is found to arise from this circumstance, and that the apparatus as now constructed, is free from any objection. It may be suspended by a crane and counterpoise, so as to be applied to more than one still.

J. J. (Holywell), mentions the fatal effects of lead observed in the county of Flint, resulting from the lead ore over which the water flows, and which is carried in solution down the streams, to the great injury of cattle. J. J. suggests that some information on this subject, pointing out a remedy, would be of service. (Some practical observations on the solubility of lead in water, and modes of prevention, are contained in this journal, vol. ii, pages 355 and 406—9. Probably some of our readers may be able to give further information on the subject, in reference to the particular case in question.)

T. H.—We have not seen any English formula for Tincture of Arnica Montana, but it may be made in the proportion of two ounces to sixteen ounces, in which case the dose would be from ʒss to ʒj. Dr. Pereira states the dose of the powder is grs. v., to grs. x. of the infusion (prepared by macerating ℥ss in Oj of water) from ℥ss to ℥j.

A. F. B.—*Phillips's Translation of the Pharmacopœia.*

J. B.—We never observed any deliquescence in nitre lozenges. When this occurs, we should infer that the nitre was adulterated with some deliquescent salt.

Mr. Howarth.—Chemist's Price Book, by Mr. Goddard. The second edition is in the press. See vol. v. page 431.

"Stannum."—(1.) The fee for perpetual ticket to the Lectures on Chemistry at the Royal Institution, is eight guineas.—(2.) The *Philosophical Transactions* are published by the Royal Society, about twice a year. The price varies according to the quantity of matter, usually from 30*s.* to £2.

A. P. S.—Ung. hyd. nitrici oxidi, is liable to decomposition if kept for any length of time. It should be made frequently.

A. B.—*Tous-les-mois* is sold by wholesale druggists and grocers. The price varies according to quality—wholesale, from 8*d.* to 1*s.* 4*d.*

X. Y. Z.—(1,) *School Botany*, by Dr. Lindley.—(2.) Marble may be cleaned by applying soap lees and quick lime mixed with water into a paste, and allowed to remain a few hours before it is washed off. Dilute muriatic acid will remove stains, but should be washed off immediately, as it destroys the surface.

"An Apprentice."—Study *Phillips's Translation of the Pharmacopœia.* Six months of practical study in the Laboratory of the Society, would be of great service in preparing for the Examination.

Quackery.—J. M. has sent us the following specimen, copied from a printed notice, in one of the most respectable streets in Swansea: "Mr. Tucker engages to cure king's evil, or ulcerated sore legs and scurvy in the blood, with any man for one hundred sovereigns. He also *cures* worms in men, women, and children, with any man in the kingdom; also rheumatic pains, gravel, nervous complaints, liver complaints, deafness, bilious and sick headaches, ringworm, toothache, and corns."

The Apothecaries' Company does not interfere with Mr. Tucker, but cases are reported to us (authenticated) in which the Company has threatened Chemists with prosecutions for prescribing across the counter. In each case the accused party had been sueing an Apothecary in his neighbourhood for a debt, and strong grounds for suspicion exist as to the motives which led to the information. [We feel sure that the Company would not allow the Act of 1815 to be made subservient to the purposes of retalliation, if the facts were boldly and candidly stated.]

F. C. T. rebuts the charge of apathy against Associates, repeating what has often been said respecting the indisposition on the part of Members to allow their Assistants opportunities for improvement, and observing that such indulgence would repay itself by inducing extra diligence in the young men. We cannot tell when the next edition of the Pharmacopœia will be published; the last edition has just been reprinted.

The late Anti-Excise Movement.—Mr. Graham Carr encloses a letter from Matthew Forster, Esq. (M.P. for Berwick-on-Tweed) stating that he had presented the petition to Parliament, and expressing a desire to protect the Chemists and Druggists against any oppressive law, by every means in his power.

The communication of C. R. has been received.

Advertisements to Mr. Churchill, Princes Street, Soho.

Instructions from Members and Associates, respecting the transmission of the Journal, to Mr. Smith, 17, Bloomsbury Square, before the 20th of the month.

Other Communications to The Editor, 338, Oxford Street, before the 20th of the month.

THE PHARMACEUTICAL JOURNAL.

VOL. VI.—No. V.—NOVEMBER 1st, 1846.

LABORATORIES FOR PRACTICAL INSTRUCTION.

Although the laws of this country recognise no distinction between the regularly educated Chemist and Druggist, and the ignorant pretender who assumes the title without possessing any qualification whatever, persons of the latter class are looked upon as black sheep, by the body with which they fraudulently claim connection. But a man who has served a regular apprenticeship is presumed to be duly qualified, and whatever may be the amount of his attainments, or the diligence with which he has applied to his studies, his title to the rank of a Pharmaceutical Chemist cannot be called in question.

Nevertheless, there is a wide difference between the qualification of individuals who have nominally complied with the same form of education, and this difference arises from two causes, first, the nature of the establishment in which they have been educated; secondly, the ability and diligence of the pupils themselves. The latter source of disparity will always exist in spite of any regulations which may be adopted—the former may be greatly influenced by the introduction of a reform in the system of education.

We have always maintained that something more than a formal apprenticeship is necessary in order to qualify the Pharmaceutical Chemist for the responsible duties of his avocation. The ordinary routine of business, mechanical dexterity in the manipulations of the shop, and a general acquaintance with the art of compounding medicines, may be acquired in most establishments by any young man of average abilities; but it is too often the case that the operations of the laboratory are either entirely neglected or very imperfectly understood, and this we conceive to be a very serious omission. Some houses are not provided with laboratories, all the preparations of the Pharmacopœia being purchased from the wholesale Druggists; others possess very limited opportunities of giving practical instruction; and even in those houses in which the greatest attention is paid to this department, the apprentice or pupil has not the opportunity of going through a complete course of manipulation. Most Chemists, availing themselves of the division of labour, confine their operations to such articles as they can advantageously prepare, finding it answer their purpose to purchase others, and especially chemicals, of manufacturers who are able to make them better on the large scale. Nor has the apprentice the advantage of practical experience in all the processes of the laboratory in which he is a pupil, since the reputation of his employer would be endangered by entrusting operations requiring much nicety to an inexperienced hand.

The only method by which this important branch of education can be brought within the reach of all students in Pharmacy, consists in the establishment of laboratories for the express purpose of practical instruction, and we contend that every apprentice should, as a matter of course, devote *at least* a year to this occupation, including the attendance of lectures on Chemistry, Pharmacy, Materia Medica, and Botany.

In a pamphlet, published in June, 1841, in which the objects of the PHARMACEUTICAL SOCIETY were pointed out, it was stated, "The construction of a laboratory on the most improved principles, containing all the needful apparatus, will afford facilities for practical researches which are likely to promote the great object which we have in view. Lectures on Pharmaceutical operations may be instituted, and pupils in this department may 'walk the laboratory,' as medical students 'walk the hospitals.'

"A complete Museum of Materia Medica, comprising specimens of good and bad drugs (exhibiting the difference), and a Library of standard works, required by students, will constitute a necessary and, at the same time, a valuable appendage to the laboratory."

The project thus announced has been carried out. The laboratory of the PHARMACEUTICAL SOCIETY is in full operation—the lectures are instituted, the Museum and Library are formed, and every facility exists for affording to Pharmaceutical students a complete and practical education. It has been asserted that these advantages are available only to members of the Society residing in London, a fallacy which we have constantly endeavoured to expose. In fact, we consider that members in the country, and especially those who have no laboratories, are even more interested than their London brethren, in supporting an establishment, which removes the disparity previously existing in reference to the means of affording practical instruction to pupils. The public laboratory is the property of all the members of the Society, and those are likely to derive the greatest advantage from it, whose establishments at home are the most defective in this department, and who may supply the deficiency by sending their apprentices to Bloomsbury Square for a season.

It has for many years been the practice of Professors of Chemistry to take private pupils, admitting them to the laboratory, and directing their practical studies. The terms upon which these advantages could be obtained were such as to place them beyond the reach of the apprentices of Chemists and Druggists, and the parties who availed themselves of this mode of instruction were either those who pursued science as an amusement, or those who intended to qualify themselves as teachers of Chemistry. The average fee was 80 or 100 guineas a-year: in some instances it was as low as 60 guineas, and we have heard of cases in which fees as high as £150 have been paid.

At the time the PHARMACEUTICAL SOCIETY was projected, we made particular inquiries respecting the fees and regulations adopted in the practical laboratories in Germany and France, and the Council endeavoured to ascertain, by preliminary calculations, how far it would be possible to place similar advantages within the reach of Pharmaceutical Students in our own country. It was impossible to compete in low charges with the foreign laboratories, which are in most instances supported chiefly by Government; although the economy of these establishments has been over-rated by common report, the nominal fee forming only a portion of the actual expense.

It was, however, proved by calculation, that by extending the number of students, practical instruction could be afforded at less than half the rate usually adopted in this country, and on the opening of the laboratory in Bloomsbury Square in the year 1844, the fee was fixed at 40 guineas for a session, which fee included all expenses of materials and apparatus.

On the opening of the next session it was found necessary to reduce the fee, in consequence of the announcement that the College of Chemistry, which had just been established, offered similar instruction for 25 guineas; and that University College, and other institutions, were about to open practical laboratories at the same rate of charge. This, however, does not include the expense of apparatus and materials, with the exception of a few articles of trifling importance.

During the first session of the laboratory at Bloomsbury Square, the fees from students rather more than paid the current expenses, the balance being £1 11*s.* 8*d.* in favour of the Society. In this calculation, however, no allowance is made for rent, taxes, or interest on capital invested in the construction of the laboratory. During the next session, the fee having been reduced to 30 guineas (including a portion of the apparatus and ordinary materials) the amount of fees from 28 students was scarcely sufficient to defray the actual outlay.

From these facts, and corroborating evidence obtained from other institutions, we consider it proved beyond a doubt that no College, or school of this description, can be carried on as a lucrative mercantile speculation. It is possible, by economical management, with a good class to meet the necessary current expenditure of the laboratory itself; and the fees ought to be sufficient for this purpose: but if the cost of the establishment (or what is called *the plant*), with rent, rates, taxes, and household servants, be included in the calculation, the receipts must in any case fall short of the expenses, for if the fees be high enough to cover all these charges, they would materially reduce the number of the students. On the other hand, the liberal principle may be carried too far, and insolvency might be the result.

In the case of the PHARMACEUTICAL SOCIETY an obvious motive exists for supplying a moderate deficiency by means of an annual subscription, since the whole Society is interested in maintaining an establishment which is calculated to raise the character of all who are connected with it. It should be recollected that our social position and political influence will always be more or less dependent upon our professional character and respectability, which must inevitably rise in the scale as our system of education improves.

The COLLEGE OF CHEMISTRY is dependent on other sources for support. It appeals to the public at large, and its especial province is the cultivation of abstract Chemistry, and the application of this science to agriculture and the arts. The fees from students can never defray its expenses; but the zeal with which many of its distinguished supporters have come forward in its establishment, may be taken as an indication of the interest the science of Chemistry has excited among the higher classes of society, who can well afford to complete the work so liberally commenced. If it should become "*the fashion*" for the aristocracy of this country to patronize and cultivate science, we cannot calculate the amount of benefit that would result. The price of a race-horse would place the College of Chemistry on its legs, and half the annual expenditure of a racing stud would keep it going. A capital of about £5000, with annual subscriptions of £1500, would be amply sufficient, with the fees from pupils, to carry out the objects contemplated. But the College must be emancipated from its present AMORPHOUS state: it must be provided with laws and a constitution.

We have observed with much regret that the COLLEGE OF CHEMISTRY has been considered by many persons as hostile to the PHARMACEUTICAL SOCIETY. This impression ought never to have existed, and it arose entirely from the circumstance alluded to in our last number (page 157). The cause having been removed, we hope the effect will cease, and that the only rivalry which will exist between the two institutions will be in the zeal with which their respective objects are supported.

These objects are quite distinct although analogous. The school of Pharmacy is designed expressly for the education of Chemists and Druggists. Every step which the pupil takes in the laboratory at Bloomsbury Square tends to this result. The processes and illustrations are derived principally from the Pharmacopœias, which furnish sufficient scope for the student to acquire the general principles of Chemistry and dexterity in manipulation, while every operation relates more or less to the ultimate object of his studies, namely, the practice of Pharmacy.

In the College of Chemistry a wider field is taken, and many of the researches, while they are highly interesting and improving to the Chemist, are rather calculated to divert the mind of the Druggist from his own legitimate sphere, leading him into more abstruse science unconnected with his particular business. We have known instances in which this has been the case, and the prospect of commencing business as a Pharmaceutical Chemist has been abandoned in consequence.

It may be observed that the laboratory of the PHARMACEUTICAL SOCIETY can accommodate a very small proportion of the students who ought to avail themselves of it, but the Society can increase the accommodation according to the demand.

THE INFLUENCE OF THE SPIRIT DUTY ON THE COMMERCE OF THIS COUNTRY.

IN the recent discussions on the Spirit Question, attention has been chiefly directed to the pains and penalties, and the hardship of Excise supervision. The necessity for stringent laws on the subject arises from the heavy duty imposed on an article of extensive consumption and the consequent temptation to fraud, which is in the direct ratio of the profit to be obtained by evading the said duty. So long as the revenue of the country is dependent to so great an extent as it now is on this tax, means must be adopted for enforcing the existing laws on the subject, otherwise the honest portion of the community must inevitably be sufferers, while rogues reap a harvest at their expense.

It is generally admitted that all excise laws are severe and oppressive, and the plea of necessity is the only one which could have any weight in their favour. In the present instance two motives exist for taxing spirits—first, the irresistible argument of pounds, shillings, and pence; secondly, the importance of a check on intemperance.

The first of these objects is attained at a greater sacrifice than might at first sight be supposed. If it can be shewn that the high duty on spirit is an obstruction to the progress of science, that it interferes to any extent with the prosperity of our arts and manufactures, and that it diverts trade to other channels which would otherwise flourish in our own country, then the losses thus sustained by the community at large should be deducted from the amount of revenue derived from the tax, before a correct estimate of the profit can be made. It is obvious that in every art or manufacture in which spirit is concerned, a tax which raises the price of that article several hundred per cent. precludes the possibility of successful competition with the manufacturers in countries where no such imposition exists. As an illustration, we may advert to the processes of the Manufacturing Chemist. In Germany there is a tax on spirit from which a considerable revenue is derived, but this tax is so low that rectified spirit may be purchased at about a tenth of the market price in this country*. It would be as tedious as it is unnecessary to enumerate all the preparations used in medicine and in the arts, in the manufacture of which spirit or ether, in some form, is essential. To these might be added numerous instances in which the same menstrua are desirable, although the result may be obtained by other processes at a disadvantage.

In all these cases the English manufacturer is in a very unfavourable position; the extent of his trade is seriously curtailed, most of the profit which he ought to obtain being divided between the Treasury and Foreign competitors, while his only chance of obtaining compensation for his labour is dependent on the knowledge of some secret processes, or the ephemeral advantage arising from any new preparations which he may have the good fortune to introduce. To add to this disadvantage of the British Manufacturing Chemist, the import duty on most Chemicals has been repealed, while the duty on the spirit required for their manufacture remains unaltered. Hence the importation of such commodities from Germany and France has been for some time on the increase, while our own manufacturers are much injured by this unfair competition.

It cannot be doubted that the present high duty on spirit, besides encouraging extensive frauds, restrains the use of that article in many manufactures on a large scale, naphtha, or other substitutes, being used instead; and it is not at all improbable that by reducing the duty in these cases the consumption would increase to such an extent as to produce even a greater revenue.

In the prosecution of chemical researches the high price of spirit is a serious evil, and often operates as a prohibition to investigations from which results of great importance might arise. The separation of the various principles of organic substances requires the constant use of spirit and ether among other solvents, and notwithstanding the most rigid economy, the cost of these materials forms a large item in the expense of a course of practical instruction in the laboratory, while many processes are imperfectly studied, or even omitted altogether, on account of the high price of spirit. At the present time, when Chemistry is claiming so large a share of public attention, and when its application to the arts and manufactures is considered a subject of national importance, any obstruction to education and research in this branch of science is to be regretted.

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* We are informed by a German Chemist, who has recently been in London, that spirit about 60 per cent. over proof may be had for less than two shillings a gallon.

When we take into consideration the value and various applications of spirit in the cases above enumerated, it is clear that the revenue derived from the tax is not all profit, and that, to a certain extent, it supplies the coffers of the Treasury at the expense of the public, for whose benefit the Treasury is designed.

The repeal of the duty on glass has produced a revolution in that branch of manufacture, the result of which cannot yet be estimated ; and it is a question quite worthy of statistical calculation, whether the collateral advantages arising from the emancipation of this article of universal application, have not more than compensated for the apparent loss to the revenue.

We are not presuming to advocate a repeal of the duty on spirit, our object being merely to point out some of the disadvantages arising in our particular department, as well as in other branches of commerce, from an exorbitant tax quite disproportionate to the original cost of the material. The subject is one which deserves consideration; and in the mean time we may be allowed to draw attention to a clause in the preamble of the Spirit Licence and Duties' Act, recently passed, namely, "And whereas, it is expedient to impose one uniform duty for the United Kingdom." This provision has been carried out in reference to the *licence for the use of stills*, but it has not yet been carried out by the imposition of *one uniform* duty *on spirit* for the United Kingdom.

	s.	*d.*
The duty in England on proof spirit is still ...	7	10
while in Scotland it is	3	8
and in Ireland	2	8

With respect to the other motive for taxing spirits, namely, as a check on intemperance, this branch of the subject does not come within our province. We may observe, however, that drunkenness prevails in our own country to a greater extent than in some others which are not provided with this *check*, and we may inquire whether other means for promoting the cause of temperance might not be adopted, which would be more effectual than the duty on spirit, which, while it accelerates the destitution of drunkards, is a direct tax upon the industry of the temperate. Father Mathew has done more for the cause of temperance in Ireland than any duty which has ever been imposed upon spirit.

LIMITS OF PHARMACEUTICAL EDUCATION.

JUST at the time of going to press, we observed some remarks on this subject in the *Lancet* of October 24th, which we cannot allow to pass without notice.

The article commences by defining the limit of the province of the Pharmaceutical Chemist, which is stated to be

> "The Materia Medica, the knowledge of all the articles it contains, or the raw material of physic, in all that relates to purity, preservation, and preparation—the knowledge of the Pharmacopœias, or of the modes in which the raw materials are combined according to the judgment of the official bodies who preside over its construction—and the perfect comprehension of prescriptions; these, with improvements or even discoveries in Pharmacy."

Then it is asked,

> "Is there, in the Pharmaceutical press, any wholesome restriction whatever, as to the scope of study proper for the Chemist? Are not *therapeutics* constantly mixed up with materia medica, though for the comprehension of them, the study of anatomy, physiology, and pathology, is essentially requisite, and without which, a smattering of therapeutic information must be extremely dangerous if exercised upon the sick?"

In almost every instance in which the education of the Pharmaceutical Chemist has been defined or alluded to in the *Pharmaceutical Journal*, it has been distinctly stated that this education should comprehend Chemistry, Pharmacy, Materia Medica, and Botany, with a sufficient knowledge of the nature and properties of medicines, to enable the dispenser to guard against accidents, and perform his duty with safety to the public.

> "Is not *Toxicology* openly grafted on the pharmaceutical courses of chemistry, botany, and materia medica?"

Of course it is—so far as antidotes and tests for poisons are concerned, this being comprised in the knowledge absolutely *necessary* to the Chemist for the safety of the public. In France, where the laws regulating the separation of the practice of medicine from Pharmacy are very strict, toxicology is an especial subject of study for the Pharmacien, and there is at the *Ecole de Pharmacie* a distinct chair for this branch of Pharmaceutical education.

On an emergency in a case of poisoning, application is frequently made to the Chemist, who ought to be able at once to detect the nature of the poison, and administer the antidote. In these cases, the delay of a few minutes may remove the only chance of saving the patient; during that interval, chemical knowledge is of primary importance, and it is the duty of the Chemist, or of any other person, to alleviate the sufferings of the patient, if possible, until the arrival of the medical practitioner.

"Who is to supply the evidence for the defence of the innocent, and the punishment of the guilty?"

Undoubtedly the Chemist in the chemical part of the inquiry—in the medical department, the medical man.

"And who are the parties who supply this kind of partial information this 'little knowledge,' which in medicine so pre-eminently, is but a 'dangerous thing?' They are physicians, public lecturers, who are teaching the same things at the same time to medical students. * * * Lectures delivered in different places do not make a difference in matter."

This is a mistake. The substance of the lectures is adapted to the audience.

We appeal to the Prospectus which states, "This course of lectures being designed for the instruction of Pharmaceutical Chemists, will differ from the lectures usually delivered in the medical schools; those particulars which relate to therapeutics being curtailed in order to admit of a greater amplification of that portion of the subject which belongs more immediately to the Druggist and Dispenser of Medicines."

We shall have occasion, in our next number, to revert to this subject, when treating of Pharmaceutical education generally. In the mean time we need only add, that the interests of our body and those of Medical Practitioners are equally concerned in effecting as complete a separation as possible between Pharmacy and the practice of medicine; and we trust that all hitherto existing obstacles to a satisfactory arrangement in this respect will shortly be removed.

TRANSACTIONS
OF
THE PHARMACEUTICAL SOCIETY.

CONVERSAZIONE.

On Wednesday evening, the 7th of October, the fifth session of the School of Pharmacy was opened at the house of the Pharmaceutical Society, by a Conversazione, to which, in addition to the Members and Associates of the Society, many Medical and Scientific men were invited. The rooms were opened at half-past eight o'clock, and were soon filled with a numerous company.

Through the kindness of some of their scientific friends, the Council were enabled, according to the usual practice on similar occasions, to display a variety of objects of interest for examination by the visitors.

To the LONDON INSTITUTION they were indebted for the use of a Grove's gas-battery, which was in operation.

To J. P. Gassiot, Esq., for the apparatus for showing Faraday's experiment on the magnetization of light.

To George Knight, Esq., for a very powerful magneto-electrical apparatus, by which water was rapidly decomposed.

To T. J. Pettigrew, Esq., for a great number of objects of antiquarian interest.

To Henry Bewley, Esq., for some specimens of Gutta Percha, manufactured under his patent. There were also other specimens of Gutta Percha in the states in which it is imported into this country, and a portion of the tree from which it is obtained, showing the manner of its exudation. These latter specimens were recently received from India by Mr. Morson.

To Mr. Einsle for the stomach-pump recently invented by James Horne, Esq., a description of which was given in this journal, vol. vi , No. 3, page 134. This instrument was much admired for its great simplicity, which was exemplified by comparison with another form of the instrument which had previously been considered the most perfect. The latter, having the flute-key valve, depends for the success of its operation on the expertness of the operator in moving the valve exactly at the right time, and any accidental error in this respect might produce serious results, by causing an effect quite opposite to that which was intended. Mr. Horne's stomach-pump is not liable to this objection.

There were also exhibited several specimens of imitation painted glass, from Messrs. Powell and Sons, of Whitefriars glass-house. A painting, by Mr. Scanlan, of the four Indian students who recently passed their examinations at the College of Surgeons ; and some very beautifully executed Daguerreotype portraits, from M. Claudet, of Brande and Faraday, and of Professor Henrich Rose, the celebrated Analytical Chemist, of Berlin, who was also himself present.

From the Royal Botanical Society's Garden, in the Regent's Park, the Council received several living specimens of medicinal plants, among which were those yielding castor oil, senna, cinnamon, guaiacum, ginger, coffee, tea, &c. &c.

A model of Mr. Mowbray's railway-whistle was an object of some attraction. A gentleman from the house of the patentee attended, to explain the construction of this apparatus, and to point out the advantage which it is supposed to possess over the common steam-whistle. This advantage depends on the great density of the gas employed (carbonic acid) the sound being proportionate to the density of the vibrating medium ; thus, it is well known that sound cannot be generated in a vacuum, and that in hydrogen, and other gases of little density, sounds are much more feeble than when produced in more dense media. The model exhibited, however, was too small to illustrate the power of the apparatus as intended for practical use.

Several specimens which have recently been added to the Museum of the Society were placed on the tables, the most prominent among which were some fine specimens of Opuntia cochinillifera, with the cochineal insects attached to them. These specimens were all obtained through M. Nobrega, a native of Madeira, who, for some time past has been a student in the Society's Laboratory, and who, at the suggestion of the Secretary, Mr. Smith, several months ago obtained some of the plants from Madeira with the living insects attached to them. Mr. Smith, although not professing to be an entomologist, has daily watched the habits and propagation of the insects, and by the aid of the microscope, has determined some points of interest in connexion with them. Preparations illustrating the points alluded to were exhibited under the microscope.

The following is Mr. Smith's description of the facts which came under his observation during the progress of the inquiry:—

ON COCHINEAL.

BY MR. SMITH,

Secretary to the Pharmaceutical Society.

The universal belief that the cochineal is *oviparous* was first shaken by Monsieur Simounet, in his statement which appeared in the *Pharmaceutical Journal* for June, 1844, vol. iii., No. 12, and in which was given an account of the introduction and cultivation of the insect in Algiers. His description both of the male and female is very faithful; but he affirms that they are *viviparous*, implying, therefore, that both the sexes have a common origin, for he makes no mention whatever of the ejection of ova.

I can verify his declaration in respect of the female insects, having witnessed the birth of many hundreds, which, under the microscope, showed their perfect development from the moment of their appearance, and which is represented in figure, No. 7, *a*; but having observed upon the mothers a yellow transparent globe, No. 7, *b*, which was subsequently dropped, and which still remained connected with them by means of a fine filmy cord, upon noting a repetition of this same operation, I became satisfied that the deposits were eggs.

The first result, furnished by a broken egg, was a thin aqueous liquid, with numberless white flocci floating on the surface.

In selecting another egg, which was of a red or purple colour, and, as it proved, more matured, evidences of organization presented themselves; and in others, subsequently, perfect insects were found, differing distinctly from the newborn females.

In its essay from the egg, the male insect does not possess the long hairs which it exhibits at the second period of its existence, and by which sign it has hitherto been first recognised; but it has to get rid of an entire coat or skin before these white hairs are developed.

Its next progress is the formation of its cocoon, which also differs essentially from that of the female. Within this cocoon it passes to the pupa state, and eventually emerges as a beautiful fly, the period of its mature existence is about fourteen days, or from its primitive condition six weeks.

The females undergo a change within their cocoon: which latter, on their quitting it, retains their shell or skin, the legs, with the tubular organ of nutrition, being distinctly perceptible at the inferior surface. It is not possible, as has been stated, that they have commerce with the males before they are quite matured, and have quitted the cocoon. The period from birth to that of propagation occupies about 110 or 115 days. The mothers survive the birth of their offspring.

The facts resulting from this inquiry are:

1. That the male insect is developed from the egg after its exclusion from the mother.

2. That the female insect is brought forth alive.

In reference to the physical characters belonging to the cochineal, as found in commerce, the *granilla* is the unimpregnated or virgin condition of the female insects—the *silver grain* is the matured and fecundated female—the *black grain* is the female exhausted by propagation—and it would seem to follow that the silver grain should constitute a better quality than the black, because, in addition to the shell of the insect, which they have in common, it contains also the innumerable bodies of the unborn young.

17, *Bloomsbury Square, October* 16*th*, 1846.

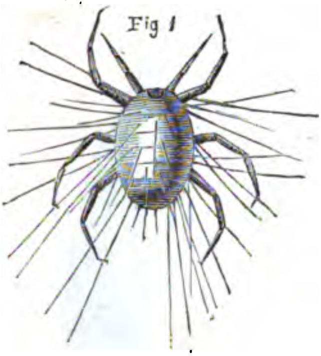
The following cuts have been made from Mr. Smith's drawings:

No.
1. The male in its second state.
2. The cocoon.
3. The pupa.
4. The fly escaping from the cocoon.
5. The mature male.

No.
6. The unborn female young.
7. Appearance of their ejection.
8. The female after birth.
9. Superior surface of the cocoon.
10. Inferior surface of the cocoon.
11. The mature female escaping from the cocoon.

[We believe the appearances observed by Mr. Smith to be accurately described; the conclusions to which he has arrived are published on his responsibility.—Ed.]

MALE.



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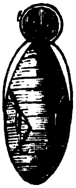

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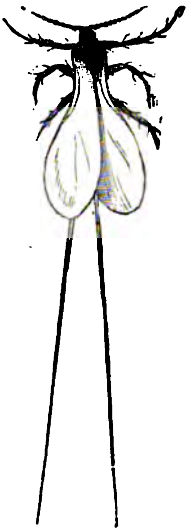
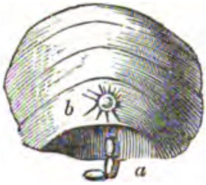


FEMALE.

6

7



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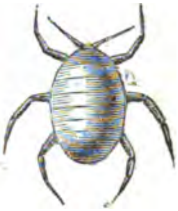

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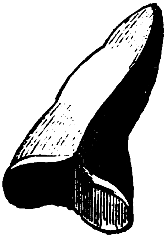

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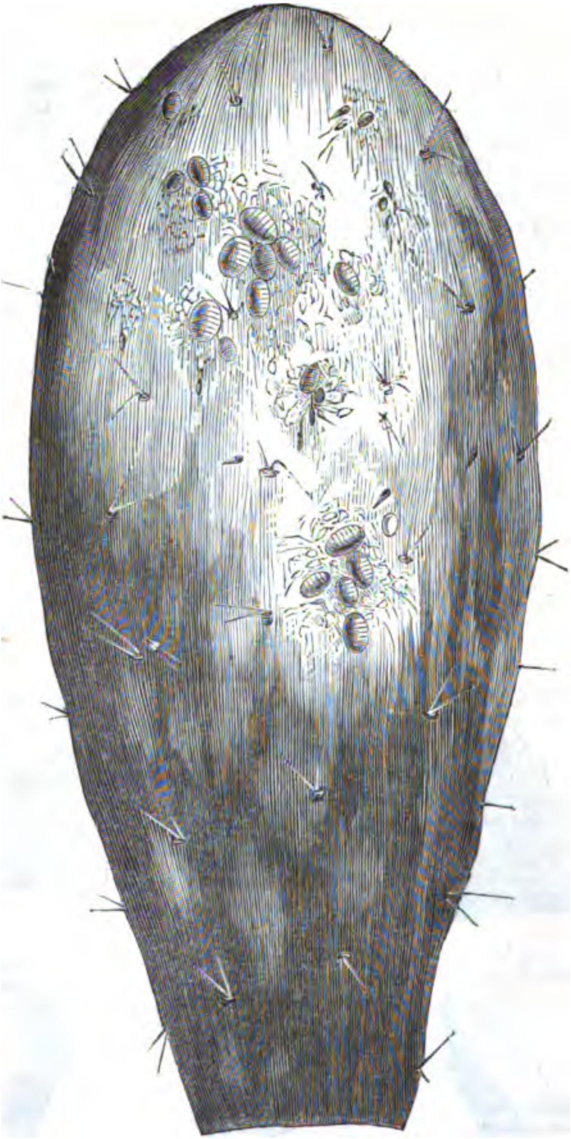

OPUNTIA COCHINILLIFERRA,
WITH COCHINEAL FAMILY ATTACHED TO IT.

ORIGINAL AND EXTRACTED ARTICLES.

ON XYLOÏDINE, OR GUN COTTON.

In our previous number, we noticed the proceedings of the last meeting of the *British Association for the Advancement of Science*, and gave a short notice of Professor Schönbein's *gun-cotton*, an explosive substance, intended to serve as a substitute for gunpowder, and the preparation and application of which the Professor announced his intention of patenting. We propose, on the present occasion, to explain what we believe to be the true nature of this substance, and to give a brief notice of its history, preparation, and application.

In the year 1833, Braconnot, in a paper published in the 52nd volume of the *Annales de Chimie et de Physique*, pp.290—294, gave an account of a new substance, which he had obtained by the action of concentrated nitric acid on starch, saw-dust, linen, and cotton-wool. To this new body, which he describes as being white, pulverulent, neutral, and very inflammable, he gave the name of *Xyloïdine* (from *ξύλον, wood*).

After describing the method of making xyloïdine from starch, he notices its preparation from *saw-dust*, *linen*, and *cotton-wool*, and observes that

> "These substances require to be heated with concentrated nitric acid, as in the cold acid they merely swell up and become soft. A mucilaginous solution is speedily formed and without effervescence ; and the solution is so thick that it sets on cooling. By dilution with water it yields xyloïdine."

He then describes xyloïdine and notices its highly inflammable properties.

Five years afterwards Pelouze, in the *Comptes Rendus* for 1838, again drew the attention of Chemists to this remarkable substance. After referring to Braconnot's discovery, he observes, that

> "If we mix nitric acid of density 1.5 with starch, the latter completely disappears in a few minutes; but the solution, on the addition of water, lets fall xyloïdine."

If, however, instead of immediately adding water, we set the mixture aside, the solution becomes coloured, the acid ultimately loses the power of depositing xyloïdine on the addition of water, but yields by evaporation, a white, deliquescent, uncrystallizable solid.

> "Xyloïdine," observes M. Pelouze, "is very combustible, taking fire at 180° Cent. (=356° Fahr.) and burning with great rapidity, and almost without residue."
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> "This property has led me to an experiment which I think susceptible of some applications, especially in artillery. By plunging paper in nitric acid of sp. gr. 1.5, leaving it there the requisite time for the acid to per-

meate the paper, which is usually accomplished in two or three minutes, then withdrawing it, and, lastly, washing it in water, we obtain a kind of parchment, impermeable to moisture, and extremely combustible. The same thing happens with tissues of linen or cotton. The paper or the tissues thus submitted to the action of the nitric acid owe their new properties to the xyloïdine which covers them." *

With regard to the nature of xyloïdine Pelouze observes, that it is to be regarded as a kind of salt, in which the starch acts as a base to the nitric acid; one atom of the water of common starch being replaced in xyloïdine by an atom of nitric acid.†

According to this view the following would be the formula of xyloïdine:

$$C_{12}\ H_9\ O_9+NO_5$$

Böttger, whose name has been mentioned in connection with xyloïdine, stated in his *Beiträge*, p. 127, that he failed to obtain this substance from wheat-starch and potato-starch by Braconnot's process; but subsequently to the appearance of Pelouze's paper he announced that he had succeeded in procuring it.—*Annalen der Chemie*, bd. xxxiv., s. 94.

In 1842, Ballot, a Dutch Chemist, published an analysis of xyloïdine. (See *Annalen der Chemie und Pharmacie*, Band xlv.) He found that the substance which Pelouze analysed as xyloïdine, consisted of two substances, one soluble in alcohol, the other (*the pure xyloïdine*) insoluble in this liquid, as well as in a weak solution of caustic potash. The latter substance, or xyloïdine, properly so called, he submitted to analysis, and deduced therefrom its formula:

$$C_{15}\ H_{12}\ NO_{16}$$

If these numbers be quadrupled we shall have $C_{60}\ H_{48}\ N_4\ O_{64}$, which are exactly equal to five equivalents of starch, *minus* two equivalents of water, *plus* four equivalents of nitrous acid:

$$4\ (C_{15}\ H_{12}\ NO_{16})=5\ (C_{12}\ H_{10}\ O_{10})-2\ HO+4\ NO_4$$

Dumas, in the sixth volume of his *Traité de Chemie appliquée aux Arts*, p. 90, published in 1843, notices xyloïdine, which he proposes to call *nitramidine*, and suggests the great utility which paper and pasteboard, converted into xyloïdine, and thus rendered impermeable to moisture and very combustible, must possess in the preparation of fires for mines (*feux des mines*), and of firework pieces (*pièces d'artifice*). He does not mention, and was probably unacquainted with Ballot's analysis. In speaking of the composition of xyloïdine or nitramidine, he observes that it is a modification of starch, in which one equivalent of hydrogen is replaced by an equivalent of nitrous vapour; and he gives as its formula*

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* M. Pelouze performed this experiment about eight years ago in the laboratory of Mr. Morson.

† Pelouze does not give a formula for xyloïdine in his paper; but Liebig, in his *Handbuch der Chemie*, in speaking of xyloïdine observes, that the formula for this substance is, according to Pelouze, "$C_6\ H_8\ O_4+N_2\ O_5$." Now this formula reduced to English equivalents would be "$C_6\ H_4\ O_4+NO_5$," the formula adopted by Mr. Fownes (*Manual of Elementary Chemistry*). But the formula $C_6\ H_4\ O_4$ does not represent an atom of starch *minus* an atom of water. Liebig himself states, an atom of starch to be represented by $C_{12}\ H_{10}\ O_{10}$; and if, therefore, we abstract an atom of water, we have the formula $C_{12}\ H_9\ O_9$, which we have adopted in the text, and which agrees with Dumas's formula.

$$\begin{array}{c} C_{12}\,H_9\,O_{10} \\ NO_4. \end{array}$$

Subsequently to the exhibition by Professor Schönbein of the effects of his gun-cotton, Dr. Otto, Professor of Chemistry, in Brunswick, has given a notice of this substance. His directions for the preparation of it are as follows:

> "In the preparation of the exploding cotton, common, well-cleaned cotton is dipped for about half-a-minute in highly concentrated nitric acid (the acid which I use being made by the distillation of ten parts of dried saltpetre and six of oil of vitriol), and then instantly placed in water, which must be often renewed, in order to free the cotton from the acid with which it is impregnated. Care must then be taken that all the knotty particles of the cotton are properly disentangled, and that it is thoroughly dried. After this the explosive preparation is ready for use."

Concentrated nitric acid (sp. gr. 1.5), such as is ordered in the London Pharmacopœia, answers for making gun cotton.

Commercial nitric acid alone does not answer; but a mixture of equal parts of commercial nitric acid and oil of vitriol succeeds. The efficacy of the oil of vitriol is to concentrate the nitric acid by abstracting water from it. Ths use of oil of vitriol in the process in this way, is, however, subject to one objection, it renders the xyloïdine hygroscopic, or at least it is very difficult so completely to purify it from the acid as to prevent this effect.

Commercial nitric acid may be concentrated, so as to render it suitable for the manufacture of xyloïdine by mixing it with its volume of strong oil of vitriol, and then carefully distilling off the nitric acid. A very dense acid is thus obtained, the sp. gr. of which will be about 1.5. If good carded cotton, which has been previously dried, be immersed in this acid for three or four minutes, then purified from the acid by repeated washing with cold water, and well dried by the heat of a water-bath, it will possess the properties of the gun-cotton. In this process the filaments of the cotton become clotted together, and require to be subsequently separated by picking or carding, which is a troublesome operation. This is not the case to so great an extent when the above mixed acids are used. In the course of some experiments which we have made with the view of ascertaining the best method of preparing gun cotton, it occurred to us, that there might be an advantage in merely exposing the cotton to the vapour of nitric acid, instead of immersing it in the liquid. This was effected by filling a tubulated receiver with dry cotton, and connecting the receiver with the mouth of a flask containing equal parts of nitrate of potash and oil of vitriol. A condenser was attached to the other opening of the receiver, and the flask then placed over a lamp. After the cotton had been thus exposed to the action of the nitric acid vapour for some minutes, the process was arrested in consequence of the spontaneous combustion of a part of the cotton, accompanied by an explosion. A similar result occurred a second time, on repeating the process. On one occasion, also, in drying some of the gun cotton, the heat of a steam-bath on which it was placed caused its combustion. In this case the heat applied must have been much below 300° Fahr. The steam was supplied from a boiler, under a pressure of twelve or fourteen pounds to the inch, the cotton being in a pan about twenty-four feet from the boiler, and the valve open.

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* There is an obvious typographical error in Dumas's formula, and which we have corrected in the above formula.

When properly prepared, the cotton is so little altered in its appearance that inconvenience, and in some cases danger, might arise from the accidental substitution of prepared cotton for that which is not prepared, and *vice versa*. To obviate this objection it might be advisable to colour all the patent gun-cotton with some peculiar tint, and to prohibit the use of any which is not thus distinguished.

The most remarkable properties of xyloïdine, in connection with its employment as a substitute for gunpowder, are as follow:

1. It is a white, tasteless, neutral solid. When prepared from starch it is pulverulent; when from cotton-wool, it resembles the latter substance.

2. It is insoluble in water. After having been immersed in water and again dried, it still retains its combustible and explosive properties. In this respect it has a decided advantage over gunpowder.

3. It is very combustible, taking fire, according to Pelouze, at the temperature of 356° F. At the British Association it was stated that Schönbein's gun-cotton exploded at about 400° F.

4. It burns with extreme rapidity. This explains the experiment said to have been made at Southampton with Schönbein's gun cotton, of firing it across gunpowder without igniting the latter. The same experiment can be performed with detonating silver, which explodes with too great rapidity to ignite gunpowder across which it is fired.

5. It burns without evolving any smoke or leaving any residuum; the sole products of its combustion being invisible gases. In blasting in mines, xyloïdine has the great advantage over gunpowder of not evolving smoke.

6. It explodes, when struck on an anvil or on stone with a hammer, like fulminating powder. It will not, however, explode so easily by the blow of a hammer on wood.

7. In reference to its employment as a substitute for gunpowder, Dr. Otto observes, that—

> "When used in a gun its operation, though in a far greater proportion to its weight, is precisely the same as that of gunpowder. This gun-cotton is employed exactly in the same way as gunpowder; a piece of it is rammed down the barrel, then a bit of wadding, and after that a ball; a copper-cap ignites and explodes the cotton."

The recoil of the gun is extremely slight when the cotton is properly rammed down, and the report not much louder than that of a large detonating cap.

8. Assuming the correctness of Ballot's analysis, twenty-six equivalents of atmospheric oxygen would appear to be required for the complete combustion of one equivalent of xyloïdine; and the products would then be 15 equivalents of carbonic acid, 12 of water, and one of nitrogen.

BEFORE COMBUSTION.		AFTER COMBUSTION.	
1 Eq. Xyloïdine ……	$C_{15}\ H_{12}\ NO_{16}$	15 Eq. Carbonic Acid	$C_{15}\ O_{30}$
26 Eq. Atmospheric Oxygen………	O_{26}	12 Eq. Aqueous Vapour	$H_{12}\ O_{12}$
		1 Eq. Nitrogen ………	N
	$C_{15}\ H_{12}\ NO_{42}$		$C_{15}\ H_{12}\ NO_{42}$

But as xyloïdine is susceptible of resolution into gaseous matter by ignition in close vessels, it is evident either that some gaseous products different from those above represented are generated, or that the composition which has been assigned to xyloïdine is incorrect.

We extract the following from the *Athenæum* of October 24th:—

> "At the annual meeting of the Royal Geographical Society of Cornwall, which was held last week at Penzance, Mr. R. Taylor gave an interesting account of some experiments made, in the neighbourhood of Penryn, for the purpose of testing the applicability of Professor Schönbein's invention to mining purposes. We extract the following particulars:—One hole was charged with powder, and another with a quarter of the weight in cotton —the latter tore the rock in atoms, in fact did more than was required. They then went to another and more dense rock, and put into a hole 13½ ounces of powder; in a second hole in the same rock, 3 ounces of the cotton —less than a quarter part—was deposited, which did the work to the complete satisfaction of all present, and equal to the powder. Other experiments were subsequently made; and Mr. Taylor found that in some cases *one-sixth* of the charge of the cotton as compared with the powder did its work. In tamping, &c., the cotton was found to be all that could be desired—and Mr. Taylor was enabled to state that, throughout, the experiments were eminently successful, and that a *fourth* part of the weight of powder, in cotton, would be found to be about its strength.

> "With regard to its effects on the air in mines, he might refer to an experiment made at Restormel iron mine, which was not very easy of access to the adit level, which was at a great distance in the mine—they tried the cotton at the extreme end, which was some 600 or 700 fathoms from the entrance, and the lode was in hard ground. Two holes were prepared, both of which were charged with the cotton—one with a *quarter* the weight of powder usually used, and the other with *two-sixths*; the holes were fired, and the cotton tore the ground to the complete satisfaction of all present. Had the explosion taken place from powder, they would not have been able to approach the holes for at least three-quarters of an hour—but on this occasion, they all went in immediately after the explosion, and experienced not the slightest inconvenience, and all they smelt was what was emitted from the safety fuse."

In England a patent has been taken out for xyloïdine, or gun-cotton, by Professor Schönbein, while in France an engineer of the name of Morel, has taken out a patent for a similar substance, an account of which Arago has recently laid before the Academy of Sciences at Paris.

In Brunswick, however, the public will have the benefit of the discovery, for Dr. Otto, in publishing an account of his experiments with gun-cotton, observes,

> "I scorn to sell or take out a patent for my very interesting discovery, the consequences of which are not easy to be foreseen; and I now publish it for the general good of the public."

ON THE PROPERTIES OF THE ASCLEPIAS CURASSAVICA, OR BASTARD IPECACUANHA.

BY W. HAMILTON, M.B.

Among the most frequent weeds which infest the pastures in most of the West Indian islands, Nevis and St. Kitts more especially, there are few more attractive to the eye, or more injurious to the cattle that feed upon it, than the Asclepias curassavica, known to the English inhabitants by the names of *Bastard Ipecacuanha* or *Redhead;* the former of these names being derived from the emetic property of its roots, and the latter from the colour of its umbel of flowers.

The Bastard Ipecacuanha is a plant with an herbaceous stem of from one to three feet in height, abounding in a milky sap, bearing umbels of bright red flowers to be met with at all periods of the year. Browne and Swartz both speak of a variety with white blossoms, common in the cooler parts of Jamaica. But I found an Asclepias with blossoms of this description growing in the immediate vicinity of Cape Henri, Hayti, which possessed characters sufficiently distinct from the Asclepias curassavica, and which appeared, as far as my experience went, to be invariably and unchangeably perpetuated from its own seed, a character not altogether consistent with the commonly received idea of a variety. Among other differences which must distinguish the Asclepias nivea from the Asclepias curassavica, independent of the colour of the blossoms and the general appearance of the plants, is the form of the leaves, which I have observed in the latter to be almost invariably *ovate lanceolate*, and in the former as invariably linear-lanceolate; such at least was the remark entered in my notes at the time; as, although the Asclepias curassavica with its red blossoms is a sufficiently common inmate of our collections in Europe, it has never been my fortune to meet a plant bearing the most distant resemblance to it, producing white blossoms, since I quitted Hayti. The Haytian plant appears in the form of its leaves to correspond with Plumier's *Apocynum Americanum Amygdali foliis longioribus, sp.* 2, *l.c.* 30. I met it in blossom in the months of June, July, and August; but while the Asclepias nivea is so abundant near the Cape, I experienced the greatest difficulty in obtaining a specimen of the Asclepias curassavica, which is so very common at Nevis and St. Kitts. Of the properties of the Asclepias with white blossoms, I can find no memorandum among my papers, but believe they were not regarded as different from those of the Redhead.

The root of this last contains an emetic principle, varying so much in the degree of its activity, as to render its operation dangerous and uncertain; and has hence occasioned its dismissal from regular practice. Among the poorer whites and blacks, however, it is occasionally employed as a cheap substitute for Ipecacuanha, the powdered root being administered, after having been previously infused in warm water and then dried, in doses of from one to two scruples. The same emetic property resides in the expressed juice, which is exhibited internally to the extent of an ounce or more.

The uncertainty which attends the emetic operation of this plant arises most probably from inattention to the proper season of gathering it: a similar uncertainty attending all the more active articles comprising our Materia Medica, which are derived from the vegetable kingdom; of which the Piscidia erythrina in the West Indies, and the Digitalis purpurea, and Colchicum autumnale in Europe, furnish familiar examples. The age of the moon also is another circumstance which demands consideration in connection with the season of the year; since whatever sceptics, whose range of observation has been confined within the limits of the temperate zones, may think, all who have a practical acquaintance with the perennial vegetation of the tropics, are fully aware of the powerful influence which the lunar phases, in conjunction with the solar heat, exert over the circulation of the sap.

Might not the emetic principle be obtained in a detached form from the decoction or infusion of the root, or of the whole plant? or from the expressed juice? and if so, might it not be made a profitable object of trade with those islands in which it is found in such inconvenient profusion? These are questions calculated to repay the labour of solution.

But it is not for its emetic properties alone that the Asclepias curassavica is entitled to attention. It is a powerful astringent, and as such eminently serviceable in checking hæmorrhages; from which it has acquired, among the inhabitants of Jamaica, the name of the *blood-flower*. Dr. Barham illustrates this by the case of a gentleman who had been long suffering from hæmorrhoidal hæmorrhage, for which all the ordinary routine of practice had been exhausted without effect, and his life was despaired of by his friends. "At last," as the doctor acquaints us, "he was advised to use this flower, which was immediately got (for they grow almost everywhere) and bruised, and the juice pressed out," which was injected by a syringe, and effectually arrested the progress of the bleeding.

He also found it equally effectual, as an internal remedy, in the cure of gonorrhœa; and mentions two cases in which he employed it with the most satisfactory results. In the first of these cases he had exhibited every remedy he could think of during a space of twelve months, without affording his patient the smallest relief. Baffled in all his attempts, he at length had recourse to the blood-weed, which he administered in the form of a decoction, made from the stems, leaves, and flowers, which was taken twice a day for about a week, when the discharge ceased, and never returned afterwards. In the second case which, from Dr. Barham's account, appears to have been one of seminal weakness, rather than virulent gonorrhœa, he recommended to his patient, an elderly gentleman, who had been labouring under this infirmity for years, an infusion of the blossoms of the Bastard Ipecacuanha, in place of his ordinary tea at the usual hours, for a month, at the expiration of which time he found himself perfectly recovered, and declared, to use the doctor's own words, "that it was worth its weight in gold," adding that "he believed if a man could make it known in Europe, he would get an estate by it." Dr. Barham speaks of having used it with equal success in a multitude of other cases of the like nature; and suggests a trial of it in leucorrhœa and other disorders of females.

A syrup prepared from the expressed juice, in doses varying from a teaspoon to a table-spoonful, is employed as a powerful vermifuge after other anthelmintics have failed. It operates frequently, as Grainger remarks, both as an emetic and a purgative, and, he says, he has seen the most surprising effects from its exhibition. Dr. Wright also speaks favourably of its properties, and recommends the juice of the leaves, to the extent of from a teaspoonful to an ounce taken on an empty stomach, in worm cases; and says, that he can vouch for its powerful and salutary effect when administered in this manner. He objects, however, to the powdered root as unsafe, no doubt from the uncertainty of its operation and the difficulty of ascertaining, in consequence, the proper dose to produce the desired effect. This is an objection, however, which might perhaps be obviated in a great degree, if not altogether, by attending to the suggestions already given. Besides its emetico-cathartic operations in worm fevers, Dr. Wright says it acts on the urinary organs and the skin.

In the unpublished manuscripts of the late Dr. Anthony Robinson, the following instances of its styptic and antiseptic properties are given, and preserved by Lunan in his *Hortus Jamaicensis*, vol. i., p. 65.

> "Mr. Thomas Nicol, a practitioner in physic, informed me, upon my telling him of the styptic virtues of the Pseudo-Ipecacuanha, which Barham calls *blood-flower*, that a mule had, by some accident, been wounded in the thigh, from which a violent hæmorrhage of blood issued, which, after the ineffectual application of all the styptics in his shop, was stopped instantaneously by a negro applying a handful of the blossoms and leaves of this plant. Another time, by the use of the same plant, applied in the same manner, he saw an ass, with a large ulcerated wound, full of maggots, cured effectually: for it immediately killed the maggots, and then, cleansing the wound, healed it."

Such are the strong testimonials to the value of a plant which Heaven has bestowed with the most lavish profusion upon most of the islands composing the Archipelago of the West Indies, but which man, in the blind pursuit of unhallowed gain, contemptuously rejects, or ignorantly overlooks; and yet, when the hurricane has swept the cane from the grounds of the planter, or the drought has blighted his hopes of a profitable return, the lowly blood-weed might contribute its modest aid to lighten the burthen of his losses, and repair the ruinous effects of these fearful visitations.

The root of this weed, which calls for no care in its cultivation, and is exposed to but few casualties in its growth, which imposes no intolerable labour on the husbandman, and awakens little anxiety in the bosom of the planter, if gathered at the season of the year in which its properties are most active, and dried in the same manner as that of the Rheum palmatum, or, which may probably be a preferable mode, the alkaloid or other active principle on which its emetic quality depends extracted on the spot, may yet furnish a valuable addition to the imports from our colonies, and contribute, in some degree, along with other hitherto neglected objects of industry, some of which have been already pointed out, to lighten the evils of bad seasons and the uncertainties of cane and coffee cultivation.

I regret much having omitted, while on the spot, to investigate the properties of the Asclepias nivea, which I too hastily assumed to be identical with those of the Asclepias curassavica. An examination of these properties, and a determination of the question, started by Browne and Swartz, as to their being but varieties of one species, are points worth the attention of those whose residence on the spot enables them to apply themselves to their solution.

14, *Octagon*, *Plymouth*.

ON THE MURACUJA OCELLATA, OR WEST INDIAN OPIUM.

BY W. HAMILTON, M.B.

At a time when there was an accidental scarcity of opium in Jamaica, a Dutch practitioner, who resided in the parish of Hanover, borrowing the hint most probably from some of the black population, found a successful substitute for the inspissated juice of the poppy, in an indigenous plant belonging to the family of Passifloreæ, common, I believe, in many parts of Jamaica, and frequent among the bushes in the vicinity of Cape Henri, Hayti, and especially in the hedges bordering the road leading to Port Dahomet, and along the path leading to the plantation Destin (pronounced by the inhabitants *Tittine*); where I met it both in flower and fruit during the months of January, February, March, and April. This is the Muracuja ocellata, or Passiflora muracuja of Swartz; an elegant climber, bearing bright scarlet blossoms, which differ from those of the Passiflora in having the corona formed into a tube. It is known in Jamaica by the name of Bull-hoof, or Dutchman's laudanum, from having been first introduced into medical use by a practitioner from Holland. The preparations employed by this gentleman were a tincture and a syrup made from the flowers, but of the manner of preparing them, adopted by him, I have been unable to procure any information.

Browne acquaints us, in his *History of Jamaica*, that both the syrup and decoction of the Bull-hoof were much used, in his time, in the south-western parts of Jamaica, where it is met with in abundance, and was regarded as producing all the effects for which similar preparations of the poppy are administered. The flowers are the part most commonly employed, and are either infused in, or pounded and mixed with wine or spirits, and regarded as a safe and effectual narcotic.

There is another species, Muracuja orbiculata, with roundish leaves, having three very short obtuse lobes, and apetalous blossoms, found in Hayti, and most probably also in Jamaica, which may be expected to partake more or less in the properties of the former, but I am not aware of its having been tried.

It is probable that the concentrated sap of these plants collected when they are in their fullest vigour, in the same manner as that of the Papaver somniferum—or the expressed juice, strained and evaporated with care to a due consistence, would be found a useful addition to the Materia Medica; and as the plants grow spontaneously and abundantly, the extract so prepared being obtainable at a lower price, might, in time, enter into successful competition with the opium of Turkey.

14, *Octagon, Plymouth.*

ON THE DETECTION AND PREVENTION OF ALTERATIONS IN BANKERS' CHEQUES.

Our readers will, perhaps, remember, that a short time since the Chairman of a Railway Company was charged with forging a cheque on Messrs. Coutts and Co. for £5000, by altering the amount for which it had been originally signed by himself and brother Directors.

In this, as in other cases of a similar nature, some doubt existed whether the amount, for which the cheque had been fraudulently filled up, had been substituted for some other sum previously inserted in the cheque, or had been introduced into a blank but signed cheque.

Now, as we believe that Chemistry is capable of yielding important aid in the resolution of doubts like these, as well as of effecting what is of far more importance, the prevention of similar frauds, we venture to lay before our readers a few remarks " on the prevention and detection of alterations in bankers' cheques," considered in a chemical point of view; for the commission, the prevention, and the detection of these crimes are all effected by the aid of Chemistry.

It is necessary, however, that we should begin by explaining how these forgeries are usually effected, for without this being understood, the mode of detecting and preventing them cannot be thoroughly comprehended, or at least successfully practised. The physician must make himself intimately acquainted with the nature and seat of the malady before he attempts to prescribe a remedy for it.

The chemical agents usually employed in removing ink-marks from bankers' cheques, letters, &c. are muriatic acid and chloride of soda. By means of a small camel's hair pencil, the letters of the writing to be removed are separately washed over, or traced with muriatic acid diluted with water. This stage of the process is technically called *starting* the writing *. The excess of acid liquor is then removed by clean white blotting paper, and the paper washed by means of the pencil with distilled water, and dried as before by blotting paper. The writing is now in a fit state to be decolourized, or rendered invisible by the bleaching liquor (solution of chloride of soda), which is applied by the camel's hair pencil, in the same manner as the acid. The paper is again washed with distilled water, and afterwards dried, first by blotting paper, and subsequently by exposure to the air. It is then in a fit state for being written on.

In this process the muriatic acid is efficacious by decomposing the ink, and converting its oxide of iron into a ferruginous chloride, while the bleaching liquor decolourizes the organic matter of the ink. The washing with distilled water effects the removal of the greater portion of the altered constituents of the ink.

But, however carefully the process may have been conducted, traces of the iron are almost invariably left on the paper. They are not visible under ordinary circumstances, but may be rendered so by certain chemical agents.

The agents which can be employed for this purpose are those which produce dark coloured compounds with the salts of iron; and of these we have found, on the whole, a solution of ferrocyanide of potassium (commonly called *yellow prussiate of potash*) the most effective. Let the paper, from which the writing has been removed, be washed over, by means of a camel's hair pencil, with this solution; taking care to prevent its contact with any recent writing or obvious ink-marks. The residual iron, of the decolourized writing, strikes, with the solution of ferrocyanide of potassium, a dark blue colour, the intensity of which is in proportion to the quantity of iron present. When the obliteration of the writing has been very dexterously effected, the blue tint produced by the detecting liquor is sometimes so faint as not to be visible until the paper is dry, and even then only after very careful and minute examination. In some cases it may be advisable to rewash the paper with the detecting liquor.

The following is an illustrative case of the value of this detective process: About six or seven years ago an extensive fraud was practised on one of the Scottish banks. Four bills for £500 each, purporting to have been issued by a London Banking Company, were presented to the Scotch agent in Edinburgh, and paid; but when returned to London, in the due course of business, were pronounced to be forgeries. The signatures were admitted to be genuine; but no bills for that amount had been issued by the London firm. Either, therefore, blank but signed bills had been stolen from the manager's desk in the London office, and filled up for the amounts in question, in which case the London bank would have been responsible; or bills for smaller amounts had been altered, after they had been issued by the English bank, and in this case the Scotch bank was liable for the amounts. The entire absence of any marks on the bills, indicative of alterations in the writing, and some other circumstances unnecessary here to notice, led to the belief that the amounts had been inserted in blank but signed bills, stolen from the London bank. The two banks, however, pending the inquiry, wisely resolved to compromise the matter, and to have one of the bills submitted to chemical investigation. This was done, and by means of a solution of ferrocyanide of potassium, the fraud was cleared up. The obliterated ink-marks on the bill were restored sufficiently to show that it had been issued by one of the branches of the English bank, and for a small amount. The name of the place and the amount had been removed, and for them the words *London*, and *five hundred pounds*, had been substituted. On inquiry it appeared, that four bills for small amounts, issued by this branch bank, were still outstanding, leaving no doubt in the minds of all parties concerned, that these were the identical bills on which the frauds had been practised; and thus entirely freeing certain parties from the suspicions which circumstances had conspired to cast upon them.

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* Oxalic acid is sometimes substituted for muriatic acid in this part of the process, but it is less effective.

Let us now consider how, in a chemical point of view, frauds like these can be prevented. Two modes have been suggested. The one consists in the use of inks, whose marks cannot be removed from paper; the other in the employment of paper from which writing cannot be removed without rendering the act obvious, by effecting certain changes in the colour of the paper. The former is objectionable, because of the impossibility of compelling every person who fills up and signs a banker's cheque to use a certain kind of ink: the second, therefore, is the only feasible plan, and on which we propose to offer a few remarks.

In 1837 a patent was taken out for the manufacture of a paper which, it was believed, would render the removal of writing or ordinary ink spots from it, by chemical agents, impossible. It consisted in the introduction of ferrocyanide of manganese (the white precipitate obtained by adding a solution of ferrocyanide of potassium to a solution of a protosalt of manganese) into the pulp or *stuff* (as it is technically called) of which paper is manufactured. The colour and quality of the paper was unaffected by this patent process; while the cost of the ferrocyanide was so small as scarcely to deserve the consideration of the manufacturer.

When attempts were made by chemical agents to remove writing from this patent paper, the colour of the paper instantly changed. On the application of muriatic acid the paper became *blue*, owing to the formation of Prussian blue; and when a solution of chloride of soda was applied it became *brown*, owing to the formation of the sesquioxide of manganese. The patentee, therefore suggested the use of this paper for banker's cheques, bills of exchange, account books, &c., and it was proposed to work the patent by means of a joint stock company. A respectable solicitor, however, who was requested to become connected with the proposed company, shrewdly suggested, as a preliminary step, that the paper should be examined and reported on by some person competent to judge of its chemical merits. This was done, and a number of fictitious bills, drawn on the patent paper were placed in the hands of a Chemist, with a request that he would, if possible, substitute some other amount for that inserted on the bills. After numerous experiments, and repeated failures, he succeeded in obliterating the ink without leaving behind any stain in the paper. This he effected by washing the paper with a solution of ammonia, immediately after *starting* the writing by the muriatic acid, and again after its decolourization by chloride of soda. The ammonia instantly removed the blue and brown colours produced respectively by the acid and the chloride, without restoring the writing. Several bills with amounts altered from smaller to larger sums were returned to the solicitor and patentee, and in consequence, all further attempts in the establishment of a joint stock company, for the manufacture of this patent paper, were given up.

Attention having been thus drawn to the subject, a number of experiments were made to ascertain whether or not other substances added to paper might not be more effectual in preventing these forgeries than the ferrocyanide of manganese, the subject of the preceding patent; and the conclusion was that writing cannot be removed from paper which has been stained with a mixed liquor, composed of a decoction of logwood and a solution of ferrocyanide of potassium, without effecting some very obvious change in the colour of the paper. This mixture is used, there is reason to believe, for preparing the cheque-paper of several banking-houses. In some cases, that part of the cheque on which the amount is to be written is alone stained, either entirely or in lines, with this mixture. Other agents are occasionally used, but, it is believed, the above mixture will be found effective.

It is much to be regretted that at this time the Bank of England and other banking establishments have not adopted some means of checking or preventing the alteration of their cheques. In this respect our national bank is far behind most of the private banks.

DECOCTUM ALOES COMPOSITUM.

BY MR. R. W. WESTALL.

I HAVE frequently experienced great inconvenience and annoyance, and also loss, from the gradual decomposition that ensues in the above preparation after it has been kept beyond a certain time (this period varying with the temperature of the weather). For some time past I have had recourse to various expedients to remedy, if possible, this defect; but at the same time to adhere to the formula of the Pharmacopœia in every essential respect. By preparing it according to these directions, the following advantages are obtained, viz.: that the article is of one uniform appearance, the rich colour is retained to the last, and the preparation is as good at the end of the twelvemonth as when first prepared, which, you will allow, cannot be said of it when made according to the directions of the *London Pharmacopœia.*

Mr. Phillips, in his advertisement to the translation of the last Pharmacopœia, says, " The College no longer insist that the medicines which they direct, should be prepared exactly in the mode prescribed, provided they will stand the trials of their purity, to which, it is proposed, they shall be submitted." I, therefore, make no scruple in adopting this slight deviation:—℞. Extracti Glycyrrhizæ ʒxiv.; Potassæ Carbonatis ʒij.; Aloes ʒiij.; Myrrhæ ʒiij.; Aquæ ℥xx. Boil these ingredients gently with the above quantity of water in a water-bath down to f. ℥xiij. Pour this into a bottle, then add Croci ʒiij.; Tinct. Cardam. Comp. ℥xiv. Macerate for ten days, then strain through muslin. This, you will perceive, is exactly double the strength ordered in the *London Pharmacopœia.*

In this state I keep it, and add an equal quantity of distilled water to it when required for use. It is, in fact, a Concentrated Compound Decoction of Aloes, but a very different sort of thing to a preparation so called, and made at four times the strength ordered in the Ph. L., which is obviously incorrect, as more than a fourth of it ought to be Tinct. Card. Comp. If a tincture made of rectified spirit be used in this preparation, then a much larger quantity of the myrrh than is intended would be dissolved, and on the addition to it of three parts of water, the mixture would become turbid, and eventually the gum deposited to a certain extent. This, I find it does not do. I therefore infer that there is not a proper proportion of spirit in it, and that it ought not to be substituted for, or used as, Decoct. Aloes Comp.

If the preparation made, as I have before stated, be allowed to stand for twenty-four hours, it may be poured off perfectly bright (the mucilage in the liquorice quite precludes it being filtered), and in this state it ought always to be sent out, I imagine, for the directions are equally explicit as with a tincture, for in both cases we are ordered to strain, a direction not always implicitly followed in this preparation.

Saffron is now generally considered to have little or no medicinal property (the doctrine of colour having ceased to exist), and the only use of it is its colouring matter, which is very much deteriorated by boiling. This has been remedied in this preparation to a certain extent by not adding the saffron until a few minutes before its removal from the fire, but even then much of its fine colour is lost.

I can only account for the decomposition by supposing that there is not sufficient quantity of spirit in it to preserve it. I have known it change in the course of a week from being perfectly bright to a thick muddy mixture, after it had been made probably two months. Immediately upon this change taking place, it throws down a yellow deposit, which keeps increasing and gradually loses all the rich colour of the saffron and the tincture, and is in appearance so different from what it ought to be, as to render it quite unfit for sale. Whether its medicinal properties have suffered to the extent its appearance would indicate may perhaps be questioned.

This method of making Dec. Aloes Co. will chiefly be found of use to Druggists with small dispensing businesses, that they may have the article uniformly fit to send out. In larger businesses where it is prepared once a month or so, it would never be kept a sufficient time for decomposition to take place. To retain the colour perfectly, especially if it is likely to be kept any length of time, it should be secluded from the light.

Hammersmith, Oct. 17th, 1846.

THE VARIETIES OF THE ALMOND.

A SHORT time ago an incident occurred to a friend of ours, a chemist, which induced us to examine the difference in the external appearance of the sweet and bitter almonds. He had prepared a prescription in which mistura amygdalæ was ordered, and was surprised on receiving the following note:

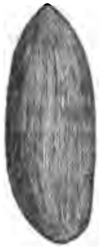
"Mrs. D——— requests Mr. S——— will be so good as to *taste* and examine the accompanying Emulsion, which she does not think made properly, according to the recipe. It tastes so very strong of bitter almonds as to be fearfully like *prussic acid.*"

The circumstance arose from the employment of Valencia instead of Jordan almonds, and a few bitter almonds having accidentally been among them and having escaped observation from the similarity of their appearance. The Chemist immediately came to the conclusion that, in order to guard against similar accidents, Jordan almonds should always be used in prescriptions, their form being so dissimilar to that of bitter almonds, that one of the latter would be immediately recognised: and he gave us permission to publish the case without mentioning names. We have heard of other instances, and on examining the different varieties of the almond, we consider that it is very difficult, if not impossible, to guard against such accidents, if the inferior description of almonds be used.

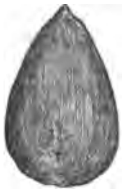
The following figures have been taken from authentic specimens of the several varieties; and, by comparing them, our readers will perceive the importance of the precaution suggested.

SWEET ALMONDS.

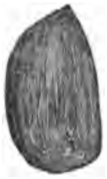
JORDAN.



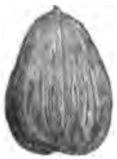
VALENCIA.



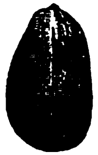
SICILY.



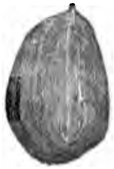
CANARY.



BARBARY.



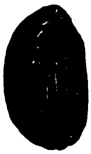
OPORTO,
Sold in Provence.



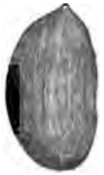
In order that the comparison may be fairly made, all the almonds are placed in the same botanical position. The pointed extremity (the seat of the *foramen*, which indicates the position of the radicle of the seed) is uppermost. At the upper and left-hand edge of each almond is the rugged line marking the *hilum*, *umbilicus*, or *scar*, by which the seed was attached to its seed-vessel or pericarp, and by means of which it received nourishment. The blunt end of the almond (called by botanists the *apex* of the seed) is represented lowermost in the above figures; here, or a little to the left, are perceived the traces of the *chalaza* or *internal umbilicus*, marked by a dark-coloured spot on the internal surface of the seed coat.

BITTER ALMONDS.

BARBARY.



FRENCH.



1. Of the sweet Almonds.—Of these we have depicted six varieties, which may be thus arranged :

a. *Spanish Almonds.*—Of these there are two kinds, the *Jordan* and the *Valencia*.

The *Jordan Almond* is distinguished from all other almonds, bitter or sweet, by its size and shape. It is longer than the other kinds, being an inch or more in length; whence it is sometimes called the *long almond.* It is narrower in proportion to its length than the other sorts. Its shape is oblong, or nearly so. Its flavour is more delicate than that of the other sorts; and on this ground, as well as the one above stated, it should be be preferred for medicinal use. Its colour is light clear brown.

The *Valencia* almond is somewhat shorter than the preceding, and is broader in proportion to its length. Its shape is ovate. Its colour dingy brown, with a dusty cuticle.

b. Portugal Almonds.—Of these the only one represented in the above figures is that given to us as the *Oporto almond, sold in Provence.* It is smaller than the Valencia, somewhat ovate, but less broad at the lower portion.

c. Italian.—The *Sicily Almond* represents, in the above figures, the Italian almond. It resembles the Valencia almond, than which it is somewhat smaller.

d. Barbary Almonds.—These are small and inferior.

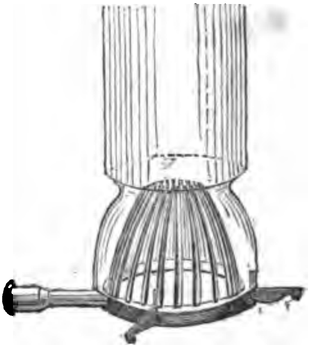
e. Canary Almonds.—These resemble the Sicily almonds, but are somewhat smaller.

2. Of the Bitter Almonds.—Of these we have figured two sorts:

a. Barbary Bitter Almonds.—This is the kind usually met with. It is small and cannot be distinguished externally from the Barbary sweet almond.

b. French Bitter Almonds.—These are paler coloured and somewhat larger than the Barbary bitter almond.

LESLIE'S PATENT GAS BURNER.



This is a decided improvement on the ordinary gas burner. The gas is conveyed to the circle of combustion by small tubes, which spring from a ring like the teeth of a comb, as represented in the engraving. The glass is contracted at the level from which the flame issues. By this arrangement, the gas issuing from each orifice, is completely surrounded by the oxygen of the atmosphere, and the combustion being more complete than it is in the ordinary burners, the light is in proportion more brilliant, and attended with less smoke, while we are informed that the consumption of gas is diminished. These burners may be obtained of Mr. Slater, of Denmark Street, Soho, who is the most scientific gas-fitter we have met with.

MODE OF ADMINISTERING EXTRACT OF INDIAN HEMP IN THE FORM OF A MIXTURE.

Sir,—Perhaps some of your readers may have experienced a difficulty in forming an elegant mixture with Ext. Cannabis Indicæ. I have found the following plan of forming a good emulsion succeed far better than any other mode I have yet heard of:—

Ext. Cannabis Indicæ ℈j., put into a mortar made warm and well rubbed with Ol. Olivæ Optim. ʒj, and then add gradually Mucilaginis Acaciæ f℥ss., Aquæ distillatæ f℥viiss.

Should the above formula be considered worthy of notice in the pages of the *Pharmaceutical Journal,* please insert it, and

Allow me to remain, yours respectfully,
James Astley Bromfield.

87, *Bold Street, Liverpool,*
October 18, 1846.

FREE ACID IN SPIRITUS ÆTHERIS NITRICI.

The following prescription came under my notice a few days back, and it occurred to me that, through the medium of the Pharmaceutical Journal, it might be published with advantage:—

℞ Potassii Iodidi gr.xx.
Sp. Ætheris Nitrici ʒj.
Misturæ Camphoræ ℥xj.
M. ft. Mistura, &c.

The mixture, on the addition of the sweet spirit of nitre, changed from colourless to deep orange-coloured, indicating the presence of free acid in the spirit, by which the iodide of potassium was decomposed and iodine set free. Had there been any dark coloured ingredient in the mixture, the decomposition might have passed unnoticed, and thus a mixture differing essentially from that intended by the prescriber might have been administered, and in some cases such a difference would be productive of serious injury to the patient.

This is one of the many cases constantly occurring, which tend to prove how necessary it is that the Dispensing Chemist should examine the preparations employed by him, with reference to their strength, purity, &c., and that he should possess the requisite knowledge for that purpose.

Leamington, Oct. 20, 1846. Fred. Curtis.

DR. COLLIER'S ORANGE-QUININE WINE.

Dear Sir,—That under the pressure of authority you should deem it your duty systematically to withhold the slightest recommendatory notice of any of my humble works, is a matter of which I shall never condescend to complain. But after repeatedly publishing my formula for orange wine of quinine, and not only declining a liberal cheque for its exclusive sale from one of your distinguished members, but also after declining to reserve to myself the ample income that would have accrued to my family from a mercantile arrangement to my own profit, I think it really hard that you should hold me up as blockhead enough to infer that ten grains of citric acid will dissolve a drachm of quinine. I presume you meant a scruple of the disulphate. In truth the disulphate is decomposed by all the weaker acids. If the wine be sour it will form the stellated or starfish-like crystal of acetate, which will spontaneously crystallize on the sides of the bottle. The better plan is to first partially dissolve the ℈ of disulphate in ʒij. of distilled water, and complete the solution by adding the citric acid, afterwards adding the wine.

It is after all a trifle in the way of formal improvement, but annually thousands are realized by it, and the gratitude of your body merges in calling me a fool for neglecting my own interests.

Trifle as it is, you would not have easily found it out.

With my respects to yourself personally,
I am, Sir, your obedient servant,
G. F. Collier.

32, *Spring Gardens*,
Oct. 20*th*, 1846.

[We regret the error which occurred in our last number. The formula was taken from a work which we have in general found to be remarkably accurate. The following is the original and authentic formula as published by Dr. Collier, and circulated with his Pharmacopœia.—Ed.]

Take of Disulphate of Quina (Howard's Quinine, or any equally good) 24 grains.
Citric Acid (Crystals), 15 grains.
Genuine Orange Wine (Mart's, or other sound orange wine), a wine-quart, or 24 fluid ounces.
Dissolve.
Dose—A dram-glass full, or liqueur-glass full, or more.

When pure, this wine remains brilliant without precipitation.

ON PIGMENTS.

BY DR. J. A. STOECKHARDT.

(*Continued from page* 180.)

RED PIGMENTS.

XXII. Sulphuret of Mercury is known as *cinnabar*, *vermilion*, *patent*, *Paris* or *Chinese red*. It forms greyish red radiating crystalline pieces, which yield a red streak. But more frequently it is sold in a prepared state, as a delicate scarlet red powder. It is prepared either in the dry way, by subliming quicksilver with sulphur, or in the moist way, by continued agitation of the same ingredients with potash ley. This splendid and durable pigment is used both as an oil and a water-colour, and is always met with in an unmixed state. Its adulteration with some cheaper red pigment is easily discovered by heating it, when there always remains a residue behind; whilst, on the other hand, the pure cinnabar entirely sublimes. Its price is from 45 to 60 gr. per lb.

XXIII. Basic Chromate of Lead is sold by the name of *chrome red* or *chrome cinnabar*. It forms a fine powder, similar to cinnabar. There is only one sort of it. It is generally obtained from chrome yellow, or still better from orange chrome, which by fusing with nitre is deprived of another portion of its chromic acid. It is said that some manufacturers are able to prepare it in the moist way; but this method is as yet kept secret. It can be employed both as an oil and a water-colour, and also on chalk walls. Its price is from 15 to 25 gr. per lb.

XXIV. Red Peroxide of Lead is met with as *minium*, *mennie*, or *Paris red*, or as *red lead*. It occurs in but a few more or less yellowish-red shades.

Minium is obtained by the continued subjection of oxide of lead to a moderate heat, by which the latter undergoes a higher degree of oxidation. To obtain the finest sort (*Paris red*) white lead is substituted for the oxide of lead. It forms a delicate very heavy orange red powder, and is used as an oil, a water, and a lime-colour. Acids and heat destroy its colour : hence when sealing-wax is made with minium it turns brown by heat. Its price is from 12 to 30 dollars per cwt.

XXV. Oxide of Iron is found in various modifications, sometimes pure, sometimes in combination with earthy substances in a natural state, and purified by washing; but frequently it is also artificially prepared or obtained as an additional or accessory result in the preparation of various chemical products, *e. g.* of oil of vitriol. It is known by the following names :—*English red, red earth, terra di Siena, Caput mortuum. Colcothar, beautiful velvet, Emperor's, King's, Nuremberg, Berlin, Paris, French, Chinese, Indian, Persian, Naples, Venetian,* or *Mennie red; red ochre, Almagra, Carnagione, mineral purple, blood stone, polishing red.* The names for the *lighter* shades are *red chalk, reddle red* and *Armenian bole, stone red, stone lilac,* and *mineral pink.* For the *brown* shades the names are *brown Siena, mahogany or chestnut brown, brown red* and *burnt ochre.* These earth pigments owe their colour to oxide of iron, but they appear in so many different hues and in such manifold forms, that it is hardly possible to give a general characteristic of them. The brown red may be considered as the typical colour of them all, but they also change by the most imperceptible gradations : on the one side into orange red, on the other into violet or black. The low price of these colours, and the circumstance that they can be used both as oil and water colours, and also for painting rooms, have procured for them a great consumption. The price is from 1½ to 40 dollars per cwt.

XXVI. Red Lake Dyes. Combinations of red colouring substances with aluminous earth are usually prepared by adding potash to a decoction of some red vegetable or animal colouring substance with alum, by which a red-coloured hydrate of aluminous earth (which might be called *pigmentate of alumina*) is precipitated. It is separated by filtration, washed, and dried. In order to obtain lighter hues, white substances must be added. They can all be employed as oil, water, and lime-colours, and may be thus classified :

A. Lake dyes from cochineal go by the name of *carmine, red lasur, red carmine, cochineal, folio, Vienna, Florentine, Paris,* or *Munich lake.* These names are very uncertain, as they are sometimes applied to the *red-wood lake,* a much cheaper substance. Formerly the name *Carmine* served to denominate the pure pigment of cochineal, but recently it has become the general denomination for the finest sorts of cochineal lake dyes; and some manufactories keep a stock of twenty sorts, which vary in price from 14 to 100 dollars per lb. The carmine is of all red pigments the most beautiful, but also the dearest. In order to test its purity it may be dissolved in a solution of caustic ammonia (*carmine ink*), when the earthy admixtures are separated. The less brilliant sorts of cochineal lakes, which are often prepared with lac-dye and red-wood, are sold under the above-mentioned denominations. The price of them descends gradually to 1 dollar per lb.

Cochineal is a dried insect, and comes into commerce in the shape of small globular wrinkled grains, which are flattened on one side, covered with either a reddish-brown and white powder (*silver, grey cochineal, Zacadille*), or with a blackish-brown powder (*black cochineal*). The magnificent colouring matter contained in them is soluble in water, and is used for the production of the above-named painting-pigments, and also in dyeing scarlet and purple red. A similar pigment, although in smaller quantity, is also contained in various other insects, which bear the general denomination of *Kermes grains,* but they have been almost entirely superseded by cochineal and lac-dye.—(See page 203 of this number.)

B. Lake pigments prepared from red-wood are called *Ball, Vienna, Florentine, Venetian, Paris, scarlet, purple, pink, ponceau, crimson,* or *violet-lac*; *new, Berlin, Sophia,* or *washing red.* Of the latter there are four sorts mixed with starch. They are to be regarded as cheap substitutes for the expensive pigments of the last section, which they certainly resemble, as regards composition, shades, and exterior form. But they do not possess, however, the purity and brightness which is so peculiar to the pigments prepared from cochineal or lac-dye. They offer a great variety of shades, from violet to scarlet, nay to orange red. Their price is from 4 to 30 gr. per lb.

The Red-wood, which is usually sold in deep-reddish yellow, more or less coarse chips is collected from various South American trees, and goes under different names, which, if arranged according to the quality of the wood, run thus:—*Fernambuca or Brazilian, Camwood, Bimas, Japan, Calliatur, St. Martin's, Costa Rica, Nickaragua,* or *Braziletta-wood.* The colouring matter of these woods dissolves in water, to which it gives a reddish-yellow colour, and it can be changed by proper maceration (*beizen*) into scarlet, crimson, or pink, and thus furnishes similar but less durable colours than carmine, lac-dye, and madder. Acids change it to yellow; alkalies to violet.

Two shades of the same, one a scarlet-red solution with alum, the other crimson-red with a salt of tin form the *common red ink.*

C. Lake pigments from *madder,* are called *Madder-lake, madder-pink, madder-purple, fresco-red, madder-carmine,* and *madder-crimson.* The paints prepared from madder do not possess the deep hue of the before-mentioned lake; they are, however, exceedingly soft and pure, and also very durable, especially on a chalk ground; they are, therefore, very much valued for painting the better sort of rooms, and also as fine oil colours. There are many varieties, and the price is from 1 to 40 dollars.

Madder (*Alizari*), is a small root which is brown externally, yellowish-red internally. It is cultivated in various parts of the globe, and sold either entire, or in the ground state. The colouring matters contained in it, which are as yet but little known, are used for dyeing, chiefly cotton; and are so durable and beautiful, that next to indigo, madder is considered as the most important material for dyeing and printing calico. Not only are red and violet colours in different shades produced from it, but also brown tints and even black. Under the name of *Gurancine,* there has recently been introduced into commerce madder partially carbonised by means of sulphuric acid, and which has already acquired great technical importance. The sulphuric acid decomposes the ligneous fibre of the root, without altering the colouring matter.

D. Lake pigments from *shell-lac* go under the name of *Lac-dye, lac-lake,* or *dyeing-lac.* A lighter sort is called *Ofenheim-red.* These pigments are obtained by extracting them with water from the crude stick or grain lac, and evaporating the red solution to dryness; frequently soda, and afterwards alum are added, so that, instead of an inspissated extract, a real lake is formed. *Lac-dye* comes usually into commerce in the form of small square cake, or as a reddish-black powder, and contains, in addition to a considerable quantity of resinous matter, a carmine-like pigment, which is produced by a small insect, by whose puncture shell-lac is formed. It is much employed in dying scarlet, for which purpose it must be dissolved in sulphuric acid, or in a strong acid solution of tin. There are from six to eight sorts of it, and their price is from 8 to 25 groschen per lb.

XXVII. RED COLOURING MATTERS are further contained:

A. In the *alkanet-root,* and that only in the dark-violet bark of the same. The *alkanet red* is insoluble in water, but dissolves in spirituous and oily fluids. With the spirituous solution a fine violet colour is applied to cotton (*genuine violet* or *liqueur violet*), [Schnaps violett].

B. In *Sandal-wood.* This is generally sold in a ground state, as a blood-red or violet powder (*violet sanders*), and contains also a resinous colouring matter, which is insoluble in water, and is usually employed for giving a red colour to the varnishes used by carpenters and others.

C. In the *Safflower* or bastard *saffron.* Under this are known the dried yellowish-red flowers of the *Carthamus tinctorius.* Water extracts from it a very indifferent looking yellow colouring matter; but if a solution of soda is applied to the washed flowers, and the extract neutralised by some weak acid, *e. g.* lemon juice, a pink-red pigment of magnificent but very fugitive beauty is obtained, which is employed as a water-colour (*pink-saucers*), or rubbed down with lime as *rouge*, or also in cotton and silk dyeing.

(*D.*) In many fruits, flowers, and other parts of various plants, *e. g.*, in cherries, raspberries, and blackberries, in the leaves of the common red poppy, in the beet-root, &c. These are only employed for dyeing eatables.

As red and violet *enamel* colours are employed, gold-purple, protoxide of copper, oxide of iron, and oxide of manganese.

OBSOLETE RED PIGMENTS.

Iodide of Mercury, Chromate of the Protoxide of Mercury (chrome-red, chrome-cinnabar), and Sulphuret of Antimony (golden sulphuret) are no longer used, either for painting or for dyeing and printing.

For *dyeing* and *printing*, red or violet are produced from madder (Garancin), cochineal, lac-dye, red-wood, safflower, litmus, and cudbear, alkanet root, and logwood. A durable mineral red pigment has not yet been discovered. In a similar manner ivory, &c. is stained red with a solution of tin, and some red colouring substances, or with a solution of gold.

For *paper-staining* are principally applicable, Minium and red lake colour, also English and chrome red, seldom cinnabar. Violet is formed from Prussian-blue and Vienna-lac, also from cochineal and red-wood.

Red and violet pigments for *confectioners* are cochineal boiled with cream of tartar, carmine, and other red lake-colours, litmus with lemon-juice. Fernambuca and logwood with alum or soda, beet-root, and cherry-juice, mixtures of harmless blue and red; for *liqueurs*, alkanet, sandal-wood, litmus, the juice of fruits, flowers, and berries.

[*To be continued.*]

ANALYSIS OF GLASS GALL, OR SANDIVER.

BY M. J. GIRARDIN.

The name of *glass gall* is commonly applied to the saline matters, principally alkaline sulphates, which separate from, and form a liquid stratum on the surface of the glass, when in the pasty state, at an elevated temperature. It is principally in the manufacture of bottle glass that this product is formed in large quantity, as the materials employed, in this case, are less pure.

The glass gall is used as a flux in certain metallurgic operations. Some time ago, an attempt was made in several glass-houses, to apply it in the manufacture of fresh portions of glass, by mixing it with the other ingredients in due proportions: it was, thus, made to replace a corresponding quantity of sulphate of soda.

Messrs. Girancourt, of the Essarts-Varimpré glass-house, being desirous of introducing this new application of glass gall in their manufactory, sent me, about a year ago, three specimens of it for analysis, with the view of ascertaining their comparative richness in fusible alkaline salts.

1. The first of these specimens was labelled *gall of window glass* ("*fiel de verre à vitre*"); it was in compact masses, of a dirty white colour, having a sharp smooth fracture, and great hardness. When exposed for several months in a moist atmosphere, it effloresced on the surface, and the pieces cracked in different directions, and became white and friable at the fractured edges.

The following was the composition of this specimen:

Water	1.65
Sulphate of soda	83.32
Sulphate of lime	10.35
Chloride of sodium	1.43
Carbonate of soda	a trace
Insoluble matter	2.25
	100.00

The insoluble matter consisted of silicate of lime, of alumina, and of oxide of iron, with traces of sand.

2. The second specimen was labelled *gall of flint glass* ("*fiel de verre à gobeleterie*"), it was in thin layers, compact and hard, and of a yellowish-white colour. It effloresced in the same way as the first specimen, after being exposed for some months in a damp atmosphere.

On being analysed, it yielded

Water	0.10
Sulphate of soda	90.51
Sulphate of lime	6.00
Chloride of sodium	0.04
Insoluble matter	3.35
	100.00

The insoluble matter was the same as in the previous case.

3. The third specimen was labelled *gall of bottle glass* ("*fiel de verre à bouteille*") it was in large pieces, of a greyish-white colour, very dense in texture, and difficult to break. Numerous nodules of bottle glass might be seen interspersed through the masses. There was but a trace of efflorescence to be observed after exposing it in a damp atmosphere for many months.

Its composition was found to be as follows:

Water	1.00
Sulphate of soda	55.92
Sulphate of lime	25.11
Chloride of sodium	0.20
Salts of potash	traces
Insoluble matter	17.77
	100.00

The insoluble matter consisted of glass, sand, silicates of iron, of lime, and of alumina, with traces of phosphate of lime.

It will be seen that these three specimens of glass gall differ considerably in composition, and in the quantities of fusible salts which they contain. It is evident that the two first are preferable, as fluxes, to the last.—*Journal de Pharmacie.*

ADULTERATION OF DRUGS.

(*From the Lancet, October* 24).

Sir,—Being in one of our chief country towns lately, I had occasion, while there, to get a recipe prepared, an ingredient of which was the ext. anthem. The Druggist to whom I applied said that he had none of th real extract; that the extract sold under that name was just "extract of gentian flavoured with the essential oil of chamomile," and that the true article could not be obtained at any shop in P——. He tried to procure some from the largest establishment in the town, but the answer was, that "they had none." This surprised me much, as that very house had sent me, a few days before, amongst other articles, several ounces of what they held out to be the genuine extract of chamomile, but which, in reality, was extract gentian fraudulently substituted. The Druggist, moreover, informed me, that the traveller of the London house with which he deals, had told him that no real ext. anth. could be obtained in London! What say the practical Pharmaciens of the metropolis to this? Has the system of substitution and sophistication reached to such an extent?

I am, Sir, your obedient servant,
A Scotch Country Practitioner.

⁂ This communication is privately authenticated.

[We challenge the author of the above letter to publish his name and the names of the parties to whom he alludes.—Ed. Pharm. Journal.]

ON THE PRESENCE OF SULPHURET OF ARSENIC IN SHELL-LAC.

BY W. BÜCHNER, OF DARMSTADT.

According to John, 100 parts of block-lac (probably seed-lac) consist of

Resin	66.7
Wax	1.7
Laccin	16.7
Bitter balsamic matter	2.5
Colouring matter	3.9
Dark yellow extractive	0.4
Insect remains	2.1
Salts, earth, and loss	6.0

The substances denominated *earthy parts* consist apparently of ligneous parts, remnants of insects, grains of quartz, and different sandgrains of all kinds of minerals, in short of the constituents of all sorts of quicksand. But the most remarkable are a number of yellow grains, from the smallest size to that of lentils, and which on a close examination are found to consist of sulphuret of arsenic. It is impossible that pieces of this size can have been absorbed by the plant from the ground; they must, therefore, have been mechanically introduced into the lac.

The quantity of sulphuret of arsenic in shell-lac varies, but it is proportionate to the sandy residue, of which it forms the one-eight part; and it is found in the red, brown, and orange shell-lac. The supposition that this sulphuret of arsenic has been employed in the preparation of lac, or has been added to increase the weight of the shell-lac, is refuted by the fact, that it is also found in the grain-lac;—that is, in lac in its natural state; and in this it is found in a still greater proportion, because none of the *earthy parts* have been removed from it. This evidently proves that the source from whence the lac obtains the sulphuret of arsenic is the quicksand. To account for the presence of the quicksand, it may be observed that shell-lac is obtained from grain-lac by fusion. But we cannot repeat the operation with the grain-lac of commerce; nay, we cannot even separate the foreign bodies from it: the resin not being sufficiently fluid to admit of it. We are, therefore, induced to infer that seed-lac intended for the preparation of shell-lac, is removed from the plant while in a more fluid state; and that the seed-lac of commerce is taken at a later period. The interval is sufficiently long to allow of the adhesion of the quicksand to the lac.—*Annalen der Chemie.*

ON A SPURIOUS YELLOW BARK.

BY DR. JUL. MARTINY, IN DARMSTADT.

Dr. Martiny gives the name of *Cortex Chinæ Pseudoregius* to a bark which has recently been introduced into commerce under the various denominations of *China regia*, *China rubiginosa*, *China flava*, and yellow-like *China regia*, &c. The pieces generally measure from three to twelve inches in length, from one to four inches in breadth, and from two to five lines in thickness. Only a few pieces, and these only in some places, are covered with the epidermis. The outer coat is usually of a silvery white, seldom of a brown colour, very loose and spongy. It consists of thin micaceous and glittering laminæ, usually of the thickness of common writing paper, which can easily be raised by a knife from the cortical substance. The coated parts are very similar to those of Carthagena bark. The predominating colour of the cortical substance is a faint yellowish brown, almost like clay; on a more close examination, however, a great variety is discovered in the different pieces: the younger barks particularly displaying many reddish-brown spots. The surface of the cortical substance is uneven from the impressions of the coat; in the younger bark the frequently occurring longitudinal cracks and the more rare transverse cracks are marked by impressions and protuberances; in the older bark scutiform impressions are often noticed. The undamaged surface, if examined with the assistance of a magnifier, appears very smooth, but thickly and deeply spotted. The entire substance of the bark has a ligneous texture, is rather heavy, and towards the interior of a somewhat lighter colour. The interior surface is usually covered with an undamaged liber-like coat, and is very similar to yellow bark. The younger bark breaks longitudinally not so easily as the older, and the fracture is shining and uneven. At the outward edge of the transverse fracture, the fibres are rather short and deep coloured, those on the inner edge are longer and considerably lighter. Another distinguishing mark is, that on touching the bark the fingers do not in the least suffer from splinters. The cut surface of the spurious yellow bark shows thin fibres and a dirty yellowish-brown colour. Its smell is bark like; its taste at first acid, very bitter and aromatic, somewhat like that of roasted coffee.—*Pharm. Central Blatt*, Aug. 26th, 1846. No. 37.

DEATH FROM RAT POISON.

About two weeks ago an inquest was held in London on the body of a gentleman who had applied to a Chemist for some arsenic to poison rats. The Chemist refused to sell the arsenic, but recommended a packet of "Butler's Vermin Killer," which is sold in printed wrappers, properly directed, and which is so disguised as to be less likely than ordinary poisons to be taken by accident. The gentleman, however, took some of the poison and died in consequence.

At the inquest the Chemist was censured for being ignorant of the composition of the poison, he being merely an agent, and, therefore, not considering it requisite to inform himself upon this point, as the poison was sufficiently guarded by the printed directions.

It was evident that the deceased swallowed the poison with the intention of self-destruction, and on this point a question arises, whether poison ought to have been sold to him. Undoubtedly if the Chemist had known for what purpose he wanted it, he would have been highly culpable in selling it to him. Believing, as he did, that the party required it for poisoning rats, he took all the precaution which was required of him, in refusing to sell poison in a form liable to be taken by mistake, and furnishing it with the safeguard of explicit printed directions. If the sale of poison thus guarded is to be prohibited, it would be equally necessary to prohibit the sale of razors, ropes, pistols, and all other articles capable of being used for dangerous purposes. On the same principle access should be prohibited to bridges, ponds, rivers, the sea, the tops of monuments and houses, or any other place where suicide may be committed.

It appears to us quite absurd to prohibit the sale of poison for vermin, simply because it may by possibility be misapplied by persons who in the absence of this "remedy for their misfortunes" might with the greatest facility resort to any one of the above modes of self-destruction.

DEATH FROM SUPPOSED POISONING.

THE *Chelmsford Chronicle* contains an account of an inquest (at Maunden) on the body of a child supposed to be poisoned. Some suspicious circumstances having transpired respecting the death, which occurred rather suddenly, an investigation took place, and the house of the suspected party was searched. Various bottles and boxes of medicine were found and sent to Professor Taylor for examination. The majority were innocuous; but three or four were more or less poisonous, among which were two kinds of mercurial ointment. On a *post mortem* examination the child was found to be much emaciated, the stomach rather inflamed, and the mesenteric glands much enlarged. The surgeon deposed that the mesenteric enlargement must have arisen from the inflammation of the stomach, and that if any poison had been given repeatedly in minute doses, he should expect these effects to be produced. Hence an inference was drawn that the suspicions were confirmed; but it appeared that Professor Taylor had not found any poison in the stomach; and the inquest was adjourned that he might further investigate it.

We allude to the case because the chief evidence of poisoning rests on the statement of the medical witness, that enlargement of the mesentery denotes the result of slow poisoning. If the inference be admitted as evidence of guilt, it would be a serious matter to a medical man for any of his patients to die of mesenteric disease, as grave suspicions might arise against him without foundation.

It is well known that this disease is very common among children, especially those who are badly fed, or of strumous habits.

In such cases, where life and death are concerned, we contend that it is highly improper to jump at conclusions, and to shape evidence according to pre-existing prejudice, instead of impartially noting facts, and deducing from them a satisfactory proof, in the absence of which no judgment ought to be given. To infer from the existence of mesenteric disease that the deceased was poisoned would be a dangerous precedent. The slight inflammation observed in the stomach was a more suspicious circumstance; but not enough to convict upon, unless the presence of poison could be proved. In this instance the chemical evidence is primary in importance; the medical report, and the old stock of pots and bottles must be taken as corroborative merely, but not conclusive, unless confirmed by the chemical analysis.

DEATH FROM A DOSE OF MEDICINE.

The same paper, also contains a report of an inquest held at Canewdon, on the body of a child, whose death was occasioned by medicine obtained from the parish surgeon. The child having been seized with "cold chills and fever," a little girl was sent to the surgeon with a verbal message to that effect. A three-ounce bottle of medicine was given with verbal directions that two teaspoonfuls were to be given for a dose. No label was on the bottle. Soon after the first dose the child died. At the inquest the surgeon acknowledged that the medicine consisted of one drachm of liquor arsenicalis, the remainder of the three ounces being spirits of lavender and water. He had frequently given the same medicine in such cases (apparently ague). He had not seen the child and had not labelled the bottle.

The idea of delivering to a child a bottle of medicine containing arsenic, unlabelled, and with merely a verbal message respecting the mode of administration, would be considered scandalous by any Chemist and Druggist. To prescribe so powerful a medicine without seeing the patient, is an act of imprudence of which no medical man should be guilty. The case is altogether very unsatisfactory; and the only explanation which could be offered (and that a lame one) is that the remuneration of union surgeons is not sufficient to admit of their doing justice to their patients.

DEATH FROM MORISON'S PILLS.

The *Cardiff and Merthyr Guardian*, of August 22, contains an account of an inquest on the body of Mr. John Nisbett, an innkeeper, who was in the habit of taking Morison's pills to such excess, that he was frequently obliged to send for a medical man to cure him. His propensity having been discovered, he was seriously warned against the danger of the practice, after which he took the pills in secret, telling the ironmonger, of whom he bought them, that he gave them to horses. On examination after death, the appearances usual in such cases were observed in the mucous membrane of the stomach and intestines, with other results, leaving no doubt as to the fact that the pills hastened the death of the patient.

THE EFFECTS OF CAMPHOR ON THE TEETH.

Mr. Tearne (student at King's College) published in the *Lancet* of September 19th, some observations on the effects of camphor on the teeth, of which the following is an extract:—

"During a minute attention paid to affections of the teeth for several years, I have met with very many cases of unnatural brittleness (*fragilitas dentium*), and on inquiring of the individuals subject to it what dentifrices they used, they have invariably answered 'camphorated chalk.' The quantity of camphor is very small in the powders generally vended; but I have been induced to make a few experiments, to ascertain the nature of the action of camphor on the teeth. I have allowed teeth to remain in chalk, impregnated with this substance, for a few days, when I have found the enamel to be appreciably altered. I have put teeth into camphorated spirit, and have perceived a similar result; the enamel becomes more brittle and more readily removed by an instrument—in fact, it appears to be rendered somewhat lighter and porous; and finally, if teeth are exposed to the fumes of camphor, morbid condition is found to supervene to a still greater extent "

The following remarks of Mr. Hunt (of Yeovil. Somersetshire) tend to corroborate the above statement. Several members of the profession have informed us, that they have observed similar results in cases where camphor has been habitually used.

" My attention was first called to the subject about seven years ago, by observing in a family the prevalence of decay in the teeth at that part of the tooth where the enamel terminates and the protection of the gum commences. Now, it is well known that the enamel, as it approaches this point, is gradually attenuated, until it terminates almost imperceptibly; and, as a necessary consequence, the effects of any menstruum or agent would be more readily displayed there than at any other part of the tooth. In the cases in question, the enamel was extremely friable throughout the entire series of the teeth (but more particularly in the molares), and easily shattered and removed with the slightest touch of the point of an instrument. On inquiry, the parties were found to be vigorous employers and defenders of camphor in the form of dentifrice and lotion for the teeth. Now, an hereditary or constitutional tendency to this form of decay of the teeth may be suggested as a probable explanation of the circumstance in this case; and I should have thought so too, had I not from that time to this noticed *frequently*—I had almost said *constantly*—these results go *pari passu* with the application of camphor; so much so, that I cannot consider the coincidence otherwise than as *cause* and *effect*.

" There is another way in which camphor displays its disorganizing effects on the enamel. In the case of aching teeth which have for some time been treated with a solution of camphor (a common domestic remedy), in the hope of avoiding extraction, it communicates such brittleness to the tooth as greatly to increase its liability to be crushed during the operation, when no longer to be postponed."—*Lancet*, Oct. 10th.

EPITHEM.

A NEW SUBSTITUTE FOR POULTICES, ETC.

THIS substance is of two kinds, termed " Impermeable spongio-piline" and " Impermeable piline," a description of which is contained in a pamphlet by Mr. Alfred Markwick.* The former is a kind of cloth into which sponge is woven, protected on one side by a waterproof surface. It is recommended as a substitute for " the staff of life" in a poultice, retaining the moisture required without being subject to the inconveniences attending the use of poultices, namely, the variation of temperature, the necessity of frequent changing, the decomposition and disagreeable odour, the weight, &c.

The second kind of " Epithem" is similar to the first, but without the sponge. It is recommended as a protection for the chest and throat, and as a vehicle for the application of stimulating liniments.

These substances are patented and introduced by a company (depôt, 69, King William Street, City), called "The Patent Epithem Company." We have not had an opportunity of testing the value of the invention, but think it quite worthy of a trial.

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* Printed by W. B. Gardiner, 20, Princes Street, Cavendish Square.

ON THE DECOMPOSITION OF WATER BY HEAT.

BY W. R. GROVE, ESQ., F.R.S.
Late Professor of Experimental Philosophy in the London Institution.

AT the last meeting of the *British Association*, it was announced that Mr. Grove had effected the decomposition of water into its constituent gases by means of heat, and that he had sent to the Royal Society an account of his experiments. We take from the *Literary Gazette* the following statement of this matter:—

"Mr. Grove first asserted, probably to the surprise of those in the habit of using the eudiometer, that every process that will combine gases can separate them. He was led to this result from the use of the eudiometer invented by him, which he briefly described; and by means of which he could apply intense heat to limited quantities of gases, analyse a bubble even most accurately, or produce any effect of eudiometry; also decompose and analyse camphor, &c. Before proceeding to the experiments, he mentioned one point in relation to equivalents, which he considered worthy of attention. It was, that hydrogen, as pure as it could be obtained, passed into the glass tube of his eudiometer, and submitted to the intense heat of the platinum wire, contracted in volume. This he found to be due to a mixture of oxygen with the hydrogen; and whatever pains he took, the hydrogen was never entirely free from oxygen. Experiment proved this beyond a doubt. But the facts he observed with the first and immediate reference to the discovery of the decomposition of water by heat alone were, that two volumes, one each of hydrogen and carbonic acid, exposed to the heated platinum wire, contracted into one volume, the residue being carbonic oxide; and that carbonic oxide, similarly exposed over water, expanded to one-third of its volume, this expansion being permanent, the carbonic oxide taking oxygen from the water and becoming carbonic acid. Here, then, were instances of oxygen being taken by hydrogen from carbonic acid, leaving carbonic oxide; and oxygen taken from hydrogen by carbonic oxide, producing carbonic acid; an apparent case of the reversion of chemical affinity. If this were the case, Mr. Grove thought, as heated platinum wire combined oxygen and hydrogen to form water, it should also decompose water and give off these gases. And this he eventually succeeded in accomplishing: first a grain bubble only, but afterwards a current of decomposition; the platinum wire being heated as nearly as possible to the point of fusion by the electric battery. In order, however, to remove every doubt as to the possibility of the electrical action of the battery being concerned in the decomposition, he arranged an apparatus in which the heat of the blow-pipe could be employed, and the same results were obtained, proving to his satisfaction that water was decomposed by heat alone."

[Until Mr. Grove has succeeded in effecting the decomposition of water by some other less objectionable body than platinum, we doubt much whether his experiments will be admitted as conclusive. Platinum possesses such very remarkable powers in promoting chemical changes, that these may have greatly aided the high temperature in effecting the decomposition of water in Mr. Grove's experiments. Would ignited iridium or osmium decompose water? Is it not remarkable that the high temperature employed by Mr. Grove did not effect tho recombination of the evolved gases?—ED. PH. JOURN.]

THE CAVENDISH SOCIETY.

A Society has recently been announced under the above title, having for its object the publication of works on Chemistry and its applications to Agriculture, Manufactures, Mineralogy, Medicine, and Pharmacy. It is proposed that the subscription shall be a guinea, and that each member shall be entitled to a copy of the work or works published during the year. We shall publish a complete Prospectus as soon as the Society is fully organised. In the mean time we need only observe that the general plan resembles that of the

SYDENHAM SOCIETY,

on which we take this opportunity of making a few observations. The original object and design of this Society we have always approved, as it affords the means of publishing various valuable works which would not be likely to answer as individual speculations, and which otherwise might never come within the reach of the public. By means of a regular list of subscribers the payment of expenses is ensured; and although all the works published may not be equally interesting to the same individual, the various tastes and pursuits may be consulted in rotation, and all obtain in the course of a few years a valuable series of standard works, fully equivalent to the amount of subscription. We have occasionally observed in the *Lancet* complaints of delay in the publication of the works; and although we cannot admit the existence of just grounds for dissatisfaction, we have made inquiry respecting the cause of the alleged irregularity.

It appears that the Council do not specify any particular periods at which the works shall appear; nevertheless, the full number of volumes has appeared within the current year. Moreover, it is impossible to decide what number of copies of any work shall be printed till the number of subscribers is known; and as many of the subscriptions are not paid till late in the year, it has frequently been found difficult to complete the arrangements for the issue of a volume when ready on account of the list being imperfect. Again, it is not uncommon for members to inquire what works are to be published for the ensuing year, and only to subscribe when these are such as they particularly wish to possess. This practice frustrates, to a great extent, the object of the Society, as it causes the number of members to fluctuate almost as much as the list of purchasers of ordinary medical books—thus making each work a separate speculation, instead of insuring in every case the sale of enough copies to pay the expenses.

The only remedy for this abuse is to impose an entrance fee of two or three guineas, which would induce those who have obtained admission, to retain the privilege. There is at present a fine of 5*s.* for non-payment within the prescribed limit, but this is as likely to induce those who are behind time to abandon the subscription for the current year, as it is to induce punctuality. Those who feel an interest in the Society should take one work with another, being assured that they have the full value for their money, as all the works are much below the price which would be charged if published in the usual way. Those who have any complaints or suggestions to make, or who wish to propose works for publication, would be more likely to attain their object by addressing a letter to the Council than by sending an anonymous grumble to the *Lancet.*

OBITUARY.

On the 25th of September, at Dusseldorf, aged about fifty-seven, Mr. Charles Dinneford, of Bond Street, one of the founders, and a Member of the first Council of the Pharmaceutical Society.

NOTICES OF BOOKS RECEIVED.

A History of Inventions, Discoveries, and Origins. By John Beckmann, *Professor of Economy in the University of Göttingen*. Translated by William Johnston. Fourth Edition, carefully revised and enlarged by William Francis, Ph.D., F.L.S., &c., and J. W. Griffith, M.D., F.L.S., &c. Vol. 2. London: H. G. Bohn.

To be noticed next month.

A Pamphlet on the Correlation of Physical Forces; *being the Substance of a Course of Lectures delivered in the London Institution, in the year* 1843. By W. R. Grove, Esq., M.A., F.R.S., &c. London: S. Highley. 8vo, pp. 52.

The Study of Physic and Surgery; *being the Introductory Address to the Medical Society of University College, London, delivered October 9th*, 1846. By William Augustus Hillman, F.R.C.S., &c. 8vo, pp. 46. London: G. Neal, Fleet Lane.

TO CORRESPONDENTS.

Errata.—In No. 3, page 141, *for* brother, *read* relative.

Dr. Collier's Quinine Wine, No. 4, *page* 191, *see page* 225 of this number.

R. M. (Carlisle) is recommended to make only a small quantity of tincture of kino at a time. See vol. i., page 399.

J. B. W.—(1.) Solution of shellac in spirit of wine, is a good cement for sticking paper labels on tin.—(2.) P. L.

A. P. S.—The furnace alluded to, was made expressly for the Pharmaceutical Society. Any person wishing to order a similar one, may apply at the Laboratory for further information.

G. P. ("An Apprentice").—Buffalo and bullocks' horns are usually softened by means of steam. In polishing them, it is common to commence by scraping the rough surface with glass, and afterwards to rub them in succession with pumice stone, rotten stone, and tripoli.

W. J. The skeletons of flowers and leaves, are obtained by maceration in water. When decomposition has proceeded far enough, they are cleansed by means of a syringe and camel's hair pencil. A very weak solution of chloride of lime is used for bleaching them when necessary.

A. P. S., L. R.—We imagine that "Circassian Cream" is a kind of pomatum sold by the hair-dressers, each having his own private formula.

E. F. B.—Glycerine is one of the products of the saponification of fat oils. It is best obtained in the preparation of Emplastrum Plumbi, the glycerine remaining dissolved in the water in which the plaster has been boiled and washed, and on evaporating this water, a thick, syrupy solution of it is obtained.

"An Apprentice."—Rose lozenges may be coloured with cochineal, jujubes with caramel.

A. K. A.—(1.) Mr. Snow Harris is a good authority on the subject of lightning conductors.—(2.) *Fownes's Manual of Chemistry.*—(3.) Yes.—(4.) Jalap is said not to act as a purgative on horses or cattle.

"Delta."—The construction of electro-magnets is described in most books treating of electricity. See *Fownes's Manual of Chemistry*, page 88.

"Festum."—(1.) We have no experience in the manufacture of pickles. Some authorities recommend the vinegar to be applied hot, others cold.—(2.) See vol. iii., page 265.

E. A.—(1.) The opacity occasioned in glass bottles in which solutions of ammonia and of diacetate of lead, have been long kept, is supposed to arise from a partial decomposition of the glass. In some cases of this kind, there is probably a molecular change, the glass assuming somewhat of a crystalline character, and becoming much more brittle.—(2.) *Gray's Supplement* has been not *revised*, but entirely *rewritten*, and considerably enlarged, by Mr. Redwood. It will be ready for publication in a few weeks.—(3.) The distilled waters of dill, and elder flowers, are slightly opaque when recently prepared.—(4.) A paper filter is the best.—(5.) Druggists are certainly not justified in using equal parts of rectified spirit and water for proof spirit.

"Tyro."—See the above, and vol. v., pages 288 and 384.

"Amator Scientiæ."—(1.) Syrup of Quinine, according to the French Codex is made by boiling 96 parts of cinchona bark in 1000 parts of water to one half, and adding 500 parts of sugar.—(2.) See the Pharmacopœia.—(3.) We are not aware what is the formula for Messrs. Ling and Keith's icing powders.—(4.) Concentrated essence of sarsaparilla, vol. vi., No. 3, p. 133.

A. P. M. (Barking) should report his still to the Excise officer, stating the circumstances of the case.

B. should do the same.

Quack Medicine Frauds.—M. P. S. (Ware) informs us that he has recently been imposed upon by a person having the appearance of a gentleman, who ordered three bottles of Clarke's lotion for the gums, offering to pay the carriage of the parcel from London, and promising to call in three days. He ordered the same articles with three boxes of Clarke's succedaneum of a neighbouring Chemist; but did not call again at either house. [In such cases, the only security a Chemist has with strangers is to obtain a deposit before sending for the goods.]

A. H. S. has sent us the following from a town in the North of England: —A fellow is about the country, whose "tale of misery" it behoves the Chemist, particularly, to be aware of. He affects to offer a species of fancy shaving soap, and the Recipe for making it—a sample of which he generally exhibits. Meanwhile, he sets about describing the wretchedness of his situation—his family (five to seven children, &c., as the case may be) starving; his means so reduced, as to necessitate his pawning even "a good satin stock" for momentary subsistence, and so forth; while his exterior and the genuineness of his manner wonderfully aid the imposture! He has succeeded in duping many of the brethren in this district. His appearance indicates a stout, somewhat handsome, dark curly-headed individual; his manner mild and retiring; his dress, a "respectable" rusty black; most likely his neck exposed. Altogether a reasonably-presentable case of "one who has seen better days," and who is "prostrated by an unavoidable and inextricable calamity." His line of march seemed (about a fortnight ago) to be Londonwise. By the way, he states himself to have been "burnt out" of the

Liverpool Apothecaries' Hall, in which he had held a responsible situation at eighty pounds a year. A hint in your journal might be useful. Such scamps as the one in question tending "to button one's pocket up" in cases where unfeigned distress presents itself.

Orthography in Prescriptions.—M. has sent a few remarks on this subject, from which we extract the following:—No one can expect the physician to pay undue attention to the caligraphic part of his prescription: his mind must necessarily be too much occupied by the ailments of his patient to feel solicitous about the graces of penmanship. In peculiar emergencies vagueness of handwriting is natural and excusable. It is only when there is manifested an habitual disregard to all the decencies of penmanship whereby the *integrity* of the dispensed prescription is *endangered*, that the habit deserves notice. I have no doubt many have, like myself, been occasionally puzzled by an ill-written recipe, and of course equally chagrined at being obliged to ponder over it as long (perhaps longer) in the mere act of extracting its meaning as the Physician did on its elaboration. I have seen prescriptions that looked as if the paper had been dusted with broken letters through a pounce box! Such productions form the *pons asinorum* of apprentices. [Obscurity in the handwriting of prescriptions, besides occasioning danger to the patient, injures the reputation of the Chemist, who is sometimes considered by his customer to be ignorant of his business, on account of the length of time occupied in decyphering the prescription.]

A. P. S. (London).—Indentures of Apprenticeship are not required from candidates for examination at the Pharmaceutical Society, provided the can give evidence of having been regularly educated.

A. D.—An Apprentice must pass the examination before he can be registered. The fee is 5*s.* if the master be a member, otherwise 10*s.* 6*d.*

A. P. S. (Chester).—(1.) We have often named Blaine's *Veterinary Art.* —(2.) Hoblyn's *Dictionary of Medical Terms*, price 9*s.* Churchill.

An Apprentice (Chester).—The next edition of the work will, no doubt, be ready before long.

"Alpha" would most likely obtain what he desires by application to Mr. Headland, Princes Street, Hanover Square.

A. P. S. (Leicester).—(1.) The art of analysis cannot be learned by books without practical experience and instruction.—(2.) See page 196 of this number.—(3.) We cannot interfere in the matter.

"Alpha" (M. P. S.)—This journal is not the proper vehicle for Answers to such questions.

Mr. Moss has been imposed upon by the person who told him that we intended to allude again to the matter in dispute. We have nothing to add to or subtract from our statement already published. The insinuation at the end of our Correspondent's letter is very ridiculous.

Advertisements to Mr. Churchill, Princes Street, Soho.

Instructions from Members and Associates, respecting the transmission of the Journal, to Mr. Smith, 17, Bloomsbury Square, before the 20th of the month.

Other Communications to The Editor, 338, Oxford Street, before the 20th of the month.

THE PHARMACEUTICAL JOURNAL.

VOL. VI.—No. VI.—DECEMBER 1st, 1846.

PHARMACEUTICAL EDUCATION.

It is admitted by all parties that the education of a Pharmaceutical Chemist should comprehend Chemistry, Pharmacy, Materia Medica, and Botany. The necessity of a preliminary classical education is also acknowledged, and no limit has been proposed to the extent to which the fundamental scholastic acquirements may be carried. The more completely the mind is trained and developed, the more readily will it acquire and appreciate the details of the particular branch which is to be followed as a business or profession.

But when the Pharmaceutical Chemist enters upon the province of his special education, it becomes expedient to define the boundary within which his labours are to be restricted, in order to prevent clashing with medical men. All the disputes and controversies which have prevailed on this subject have arisen from the want of a proper understanding between the parties concerned respecting their several functions. It has been our constant endeavour to promote an amicable arrangement of these differences, and to prove that the desired object is likely to be attained, not by coercive measures and arbitrary penalties, but by the introduction of a regular Pharmaceutical education, under the sanction of the legislature. At present the province of the Chemist is regulated by usage and precedent. In any case in which his right to act is called in question, the only mode of arriving at a decision is to inquire whether Chemists have hitherto been accustomed to act in similar cases. With respect to his qualification the law does not interfere, nor does it recognise the necessity of any education whatever in those who are expected to perform delicate chemical processes, and who deal in substances the majority of which are deadly poisons.

The legal definition of a Chemist and Druggist includes every person who may think proper to assume the name, and to offer drugs for sale, exhibiting the usual show bottles. As our body is endeavouring to emancipate itself from this stigma, and to restrict the definition to those who are duly qualified, it is of the highest importance to determine what are the proper functions of the Pharmaceutical Chemist, and what branches of knowledge should be comprised in his education. The Council of the PHARMACEU-

TICAL SOCIETY have for several years devoted much attention to this subject, and in the voluntary course of education which they have introduced, have used their utmost endeavours to lay the foundation of a system calculated to raise the character of our body, conducive to the public good, and, therefore, entitled to the sanction of the legislature. Care has also been taken to avoid encroaching on the province of the Medical Practitioner, to establish the department of Pharmacy as a distinct branch of the profession, and thus to secure the assistance, instead of provoking the jealousy, of Medical Men.

Notwithstanding the steadfastness with which this object has been kept in view, and the general approval with which the undertaking has met with in the profession, it has been found impossible to escape occasional animadversions from those who have not been fully acquainted with the facts of the case, and the measures which are in progress.

In order to correct any erroneous impressions which may exist, and to prove that there is no ground whatever for the suspicion that our body is likely to follow the example of the Apothecaries of the last century, we propose to describe briefly the course of education which the Council has adopted, and which we conceive to be fully adequate to ensure the complete qualification of the Pharmaceutical Chemist for his own legitimate duties, without transgressing the boundary between himself and the Medical Practitioner.

Our course of instruction in CHEMISTRY resembles that which is adopted in other schools. The number of lectures in the first instance was restricted, as it was considered desirable not to encroach too much on the time of the Students at the commencement. By degrees the course has been extended, and is divided into two portions, namely, Inorganic and Organic Chemistry; which comprise about three-fourths of the ordinary number of lectures. This deficiency is more than compensated by the course of lectures on PRACTICAL PHARMACY, the first of the kind ever established in this country. These lectures are designed expressly for the Pharmaceutical Chemist, and are calculated to make him familiar with all the processes of the Pharmacopœia, and with every manipulation of the laboratory and of the shop.

The establishment of a PRACTICAL LABORATORY for the instruction of students, is also a new feature, which we discussed in our last number, and therefore pass on to MATERIA MEDICA. This is a very important branch of study, and the course of lectures has been adapted to the particular province of the Pharmaceutical Chemist. In the medical schools, it is the custom to combine Materia Medica with Therapeutics, and to treat at some length on the mode of applying the various remedies, describing the particular forms of disease to which they are respectively applicable. In our course of lectures, this latter part of the subject is almost entirely omitted, while that which relates to the natural history of drugs, is amplified and extended. It would be incorrect to state that therapeutics are omitted altogether. It is necessary for the Chemist to be acquainted with the doses and properties of medicines, and the mode in which they are usually combined or prescribed. In the event of an error occurring in the prescription of a medical practitioner, the Chemist should be able immediately to detect it, and thus to prevent mischief. The knowledge required for this purpose, is the first step in therapeutics, since it implies an acquaintance with the therapeutic uses of remedies. In the absence of this knowledge, a dispenser might ignorantly administer a scruple of a substance, if ordered, by mistake, instead of a grain, and in a variety of cases, might occasion injury, or even death, by adhering heedlessly to instructions erroneously given, instead of averting the calamity by calling on the prescriber to inquire what was his intention. He would also be liable to mislead his customers who inquire the doses of ordinary domestic medicines. To a certain extent therefore, the Chemist must be acquainted with therapeutics; but this does not include the symptoms of disorders, nor does it qualify him to practise medicine as an Apothecary.

TOXICOLOGY, so far as relates to the properties of poisons and their antidotes, is among the legitimate studies of the Chemist. In cases of poisoning, it constantly happens that analysis is required, which few medical practitioners are competent to undertake. When great delicacy of manipulation is essential, application is usually made to a Professor of Chemistry who is particularly skilful in analysis; but such cases often occur where no chemical Professor is within reach, and the Pharmaceutical Chemist is naturally expected to throw some light on the subject. If the detection of poisons formed a necessary part of the education of every person qualifying himself as a Chemist and Druggist, this knowledge would be more often put to the test than is now the case, and it might be the means of saving many lives, otherwise sacrificed for want of timely aid. The administration of antidotes is the province of the medical man, except on emergencies, when the Chemist happens to be the only person within reach, and then it becomes his duty to act as promptly as possible. If he were to continue his attendance on the patient, instead of sending immediately for medical aid, he would be transgressing the bounds of his office, and incurring a serious responsibility.

BOTANY, although forming a distinct course, is in fact a branch of Materia Medica. It is essential to the Chemist, and comprises a knowledge of the external characters of plants in general, with the physical properties of the several classes, and their ordinary medicinal uses. In the lectures of the PHARMACEUTICAL SOCIETY, the instruction is adapted as much as possible to the requirements of the Chemist, and the privilege of attending at the Botanical Gardens in the Regent's Park, affords facilities for improvement rarely enjoyed by students.

In all these branches of education it is impossible to furnish the Chemist with the information absolutely requisite for enabling him safely to conduct his business, without some allusion to physiology and the medicinal effects of various substances. Even Chemistry is not an exception, as an acquaintance with the nature of organic bodies, whether animal or vegetable, involves many important questions which, abstractedly considered, would seem to belong to the Medical Practitioner. The structure of animal bodies, the chemical explanation of the digestive process, the properties and composition of the blood, the decompositions occasioned by the action of poisons, the modes of counteracting chemically such injurious action, the separation of the active principles of vegetable substances, and the precautions requisite in the use of remedies, especially when thus concentrated—in short, every circumstance connected with the chemical relation of remedies to the animal structure to which they are applied, is of essential importance to the dispenser of medicines.

When the mind of a Chemist is properly stored with this valuable knowledge, when he feels conscious that his character and position in society are dependent on his qualification for his own scientific occupation, what inducement can he feel to transgress the boundary of his proper functions? There is in his own department ample scope for the exercise of his abilities, for the pursuit of fame, for the acquirement of a subsistence.

In a paper read at the first Pharmaceutical meeting (May 11th, 1841) the importance of recognising and protecting the Pharmaceutical Chemist was pointed out, and we repeat the assertion:—

> "By raising the Pharmaceutical department to that degree of consideration to which it is entitled, and which it holds in other countries, we shall afford to the Chemist and Druggist an inducement to confine himself as closely as possible within his own province. The more his mind is occupied with the details of the pursuit, on the right exercise of which his respectability would depend, the less likely would he be to interfere with the interests of the Apothecary by giving medical advice."

Why do we hear complaints of the encroachments of Chemists on Medical Men? Because their department is neither recognised nor protected by the legislature—because they are encroached upon by the Apothecaries on one side, by grocers and oilmen on the other—because their territory is invaded, and no boundary line exists on either side—it is a scramble, in which the motto of each is “ Every man for himself and Providence for us all.” Why do some Chemists aspire to be thought “ doctors?” because, *as Chemists*, they rank with hucksters, chandlers, and other uneducated tradesmen, and are identified with the disreputable practices of the motley group of persons who fraudulently assume the title of Chemist. They fancy that in proportion as they approach to the dignity of a “ doctor,” they rise in respectability, forgetting that those who profess to act in a vocation for which they are not qualified, degrade themselves by becoming quacks. They think it “ answers their purpose” to prescribe, and probably even to visit patients occasionally. Let them be legally recognised and protected as Chemists, and they will soon be convinced that it will “ answer their purpose” much better to adhere to their own legitimate business.

The question of counter practice has been sufficiently discussed. We have pointed out the fact that, whatever abuses prevail in this respect, arise chiefly from the defective state of the law in reference to Pharmaceutical education, the mutually injurious competition with Apothecaries who keep open shops, and also from the prejudice and propensity of the public (see vol. iv. page 246-9). We have shewn that patients, especially those who are in the habit of “ doctoring” themselves, will occasionally make inquiries of Chemists respecting the doses and properties of common remedies, and this cannot be prevented by any law whatever. But we feel quite persuaded that, as a general rule, the most qualified Chemists, are the least disposed to indulge in the “ privilege” of counter practice. In proportion as the amount of education diminishes, the propensity to become “ doctors” increases, and the practice is carried to the greatest extent by the itinerant quack-doctors, who are, in the present state of the law, nothing more or less than locomotive Chemists and Druggists (see vol. v., p. 148). The most effectual remedy for this abuse, and for other abuses existing among the members of our body, the greatest boon to the Chemists themselves, and the greatest protection to the Medical Profession, would be the recognition by law of a proper system of Pharmaceutical Education, and the protection of the body thus educated against the frauds of impostors.

LATE HOURS OF BUSINESS.

We have seen various statements recently published, reflecting on the Council of the Pharmaceutical Society for the neutral course they have taken in reference to the abridgment of the hours of business, which neutrality is attributed either to apathy and negligence, or to a prejudice in favour of late hours. Several of our Correspondents have expressed dissatisfaction on the subject, and called upon us to assist in the endeavour to introduce a reform.

We, therefore, think it right to represent the facts of the case, to disclaim altogether the indifference which is attributed to us, and to give substantial reasons for the policy hitherto adopted by the Council.

When the Pharmaceutical Society was projected, about six years ago, it was generally supposed that such an institution could not long exist, on account of the jealousy and coolness which had previously prevailed among the members of our body. It was notorious, that every endeavour to form a permanent institution had failed, and that in most instances this result had arisen from some unfortunate dissensions on matters in which conflicting interests were concerned. It was universally admitted to be highly desirable "to unite the Chemists and Druggists of this country into one recognised body;" and it was considered that this could only be effected by the adoption of measures calculated rather to promote cordiality of feeling than to give rise to misunderstandings or disputes. Accordingly, the objects of the Society were stated to be the protection of the general interests, the advancement of the art and science of Pharmacy, and the establishment of a benevolent fund. In the prosecution of these objects, the old jealousies were forgotten, reconciliations took place, the members met cordially to discuss scientific subjects, the Society increased, and those who had prophesied its speedy dissolution acknowledged their error. Whenever the interests of the body were at stake, the Council have used all their exertions to promote the general welfare—measures have been adopted with reference to education, which, if persevered in, will effect a great improvement in the character and position of our body—we are recognised by Royal Charter, and looking forward to further protection by Act of Parliament.

During the progress of these proceedings, an agitation arose among the Associates of the Society, about two years ago, and a memorial was presented to the Council, advocating an abridgment of the hours of business. The subject was discussed, and the Council, after mature deliberation, replied, that however desirous they might be to promote the object in view, they had no power to act officially in the matter, and regretted their inability to comply with the request contained in the memorial, as they could not interfere with the domestic arrangements of individuals without the danger of giving offence, and thus disturbing the harmony which had hitherto fortunately prevailed in the Society.

We felt conscious at the time that the Council was placed in rather an embarrassing position. A question was brought before them which, in the recollection of all present, had never been agitated without giving rise to unpleasant differences of opinion, and they feared that by taking an active part in the movement they would revive the old jealousies which had slumbered for the last four years. At the same time they would gladly have availed themselves of the opportunity of seconding the wishes of the Associates, if they could have seen their way clear to entertain the question.

Even before the presentation of the memorial rather a serious disagreement had arisen, which threatened to impair the reciprocal confidence between principals and assistants in some quarters. We abstain from entering into the particulars of this circumstance which ought to be buried in oblivion, nor do we offer any opinion on the case. It has been recently alluded to in another journal in a manner very unjust to the Council, upon whom is cast all the blame of the failure of the movement. However desirous the majority of the Council might have been to advocate the cause of early closing, it would have been highly imprudent to entertain the question during the existence of the unpleasant feelings which then prevailed between some of the parties concerned. Whatever doubt previously existed was confirmed by this unfortunate event, and it became the unanimous opinion that the subject was a dangerous one, especially under existing circumstances.

Viewing the question abstractedly, the Council considered that they had no power to effect what was expected of them by any direct and specific measure. They might as well attempt to moderate the heat of summer or the cold of winter as to introduce a sudden revolution in the local arrangements of Chemists throughout the country, or throughout the several districts of the metropolis. The advancement of art and science may enable persons in various localities better to guard against the inclemencies of the weather: in like manner the Council of a Society may inculcate among its Members a congeniality of sentiment from which local and general reform may be anticipated as the natural result. The groundwork of every kind of social improvement is unity and harmony among the parties concerned; and this is the grand object for which we have been striving. By encouraging local meetings of the Members, and endeavouring to bring about a sociable and friendly intercourse among neighbours, by avoiding hazardous controversies, and taking advantage of every opportunity of introducing topics on which all could sympathise and none could disagree, the Council have done every thing in their power to facilitate the reform of abuses in general, among which late hours may be included.

We have heard of a doctor who advised a hypochondriacal patient to consult a physician in one of the Shetland isles. The patient undertook the journey, but not finding any medical man in the island, returned and abused his doctor for the hoax. Being asked as to the state of his health, he replied that he never was better in his life. The doctor inquired, "What more do you desire?"

The Council of the PHARMACEUTICAL SOCIETY have adopted precisely the same policy. They have endeavoured to promote the health of the body by correcting the general constitutional disturbance, instead of calling in the aid of the Society to blister each part affected. The cure is in progress, and we sincerely hope our Members will not swerve from that unity of purpose which is the only safe and effectual remedy. The cry of *cheap bread* or *early closing* may serve to push the sale of a newspaper; but will agitation fill empty pockets? Will taunts and sneers promote harmony and good feeling?

In order to ascertain to what extent reform has taken place in the hours of business since our brethren have been brought together by the influence of the Society, and whether advantage could possibly arise from any kind of interference, we have corresponded with the representatives of the Society in many towns in the country, and the following is the result of our inquiries:—

In one place, a fashionable watering-place, the hour of closing is eleven. An attempt was recently made to change it to ten, but it was found impracticable on account of the general late habits of the inhabitants.

In fourteen places the usual hour is ten, or a little after. In six of the above a desire prevails to close at nine, in the remaining eight no alteration is proposed.

In ten places the hour is nine or half-past. In four an alteration to eight o'clock is desired, in the remaining six no alteration is proposed.

In sixteen places, the hour is eight or half-past. In nine, an alteration to seven o'clock is desired, in seven, all parties appear to be satisfied.

In several places, there appears to be no general rule, the more respectable and regular Chemists closing at nine or earlier, while others (chiefly those who sell cigars) keep their shops open until ten or eleven.

In all the places above alluded to (except three) there are some deviations from the time agreed upon. These departures from the general rule, occur chiefly in the cases of Chemists who are also grocers, and who are regulated by the grocers' hours, and those who sell cigars, and whose business ends in smoke.

In a few places, we are informed that some Chemists keep their shops open on Sunday, chiefly for the sale of cigars; but in most country-towns, we believe, the shops are in general shut, or nearly so, on Sundays. Some Apothecaries are exceptions.

In two places we understand that the Chemists are very unsociable, and rarely speak to each other, therefore nothing can be done In Leicester, Colchester, and Chatham our brethren are unanimous, and consequently have no difficulty in carrying out any regulations which may be desirable for the general advantage.

In upwards of twenty places, a reform has taken place within the last four or five years, an hour or more having been abstracted from the period of business.

In seven places the attempt was made, but in each case one person refused to join and frustrated it.

In eight places the efforts have been found ineffectual, on account of differences of opinion. In several others, endeavours are still in progress with hopes of success.

In two places the hour has been changed from eight, until seven, and was found too early, as it was impossible to curtail the business within the limits ; it was therefore agreed, by general consent, to revert to the former hour. In one case a similar change was made, and revoked because it was found that the young men did not employ their time properly in the evening.

In two places, all but one or two signed an agreement to shorten the hours. Those who did not sign, acted up to it ; while some of those who signed, broke it almost directly.

As a general rule, we observe that in agricultural districts the hours of closing are early, but in these cases, business commences at six in the morning. In manufacturing districts, and in large towns, the average hour of commencing is from seven to eight, and business is later in the evening.

In most places, a distinction is made between winter and summer, the time varying half an hour or more, according to the season. Saturday evening and market days, are generally stated as exceptions, business being of necessity later on those evenings.

We have taken considerable pains to collect and arrange the information furnished, by our correspondents, some of whom have taken the trouble to inquire of all the neighbouring Chemists, in order to furnish a correct account. We have endeavoured to classify the places so as to give a general idea of the average, and although it is difficult to collect a complete statistical report from a variety of letters differently worded, we are satisfied of the accuracy of our statement in all essential particulars.

From the above facts, it is clear that it would be impossible to fix upon an hour for closing which would be suited to all parts of the country. The local circumstances of each town, and the habits of the inhabitants, must have some influence in regulating the hours of business. It is also obvious that it would be impossible to satisfy all parties, for whatever the hour of closing may be, there is a desire to close an hour earlier. In fact, the *average* of dissatisfaction is greater where the hour is eight than where it is ten or later. It would be impossible to adopt the same hour in every part of London, as there is as much difference between the circumstances of different districts, as there is between those of towns in the country. In the city it may be convenient and easy to close at nine, but this could not be done in the west-end of London, especially where there is much dispensing business. During the season, physicians are visiting their patients until seven or eight in the evening. Many prescriptions are written when the families are about to dine, and no servant is at liberty. After dinner, the prescriptions are sent to be prepared, and it often happens that there is more business done between nine and eleven, than during any other two hours of the day*. We should be glad to find a remedy for this evil, and do not deny the possibility of effecting some improvement, but we are quite sure that this cannot be done by the official interference of the Society with the domestic regulations of its members. Nor is it a case in which violent agitation is likely to produce a good result. Those who are not in favour of the movement, will not be driven, and those who imagine that a combination raised for the purpose of carrying the point *vi et armis* is likely to succeed, must be lamentably inexperienced in reference to human nature. In the report above given, it is seen that in several places, one dissentient had frustrated the attempt. In others, the departure of one or two caused their neighbours to follow the example, which spread throughout the town. Whatever is done must be voluntary, and the result of unanimity among the parties concerned.

It may be asked, in what manner then, can the object be effected? We reply—let those who are desirous of a change, cease to taunt and reproach those who entertain doubts as to its practicability, let them try the effect of persuasion, and *lead* their neighbours into acquiescence, instead of endeavouring to *drive* them into submission. Let the Chemists in each town confer with each other in a friendly and sociable manner, *not only on this subject, but on others in which the general welfare is concerned.* When the circumstances of the several districts of a town differ, let the residents in each district confer among themselves.

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* It is much more practicable and convenient to allow the young men an hour or two in the morning, which gives them an opportunity of attending the lectures at Bloomsbury Square. We have found advantage from this practice, and recommend it to others.

Let our whole body, in the various localities, follow the example of our brethren in the three towns above-mentioned, where we are told that the Chemists are *unanimous*, and that they have therefore effected all that could be desired in reference to the hour of closing shops.

It is useless for strangers to interfere, or for the Society to interpose its authority. Such an attempt would be as imprudent as meddling with the quarrels between a man and his wife, an experiment which usually results in both the disputants uniting to attack the intruder.

THE APPLICATION OF THE DAGUERREOTYPE PROCESS TO THE ARTS.

The accuracy with which this process delineates the minute details of objects, and the short space of time in which this is effected, would lead us to expect that it would be of great use to the painter in reducing his models to the flat surface. To a certain extent this is the case, and painters occasionally resort to this mode of fixing fugitive forms or compositions in aid of their art. But there is one defect in the images thus transferred, namely, that they generally appear more or less out of proportion. This arises partly from the point of view from which the image is taken being too near to the object represented, which makes the perspective too violent. It is also impossible to adapt the focus of the lens accurately to objects which are not in the same plane. The artist has a licence in respect to the perspective, for while he draws the general form of his figures, as they would appear at a considerable distance, he completes the effect and details, as if they were much nearer to the eye.* When the sun is employed as the portrait-painter no licence of this sort can be taken, the rules of perspective being strictly observed, with the slight deviation above mentioned in the focus of the lens, and we must either be content with an indistinct representation, or, by approaching near the object, obtain a forcible effect more or less distorted. Thus in the daguerreotype portrait of a person sitting with his hands on his knees, the limbs appear much too large for the body, and the nose, being a prominent feature, appears too large for the face.

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* It is said of Denner, a celebrated old master, who carried the finish of the minutiæ to a great extent, that his portraits had a good general effect at a distance, and on approaching and examining the eye with a glass, the most minute objects could be seen reflected in the pupil, as, for instance, a whole street with all the numbers on the doors! This is doubtless an exaggeration, at all events we have never seen a specimen of the kind. Sir Joshua Reynolds, on the contrary, was celebrated for "broad effect," and in some of his finest pictures the details are very indistinctly made out, the pictures having been finished as well as commenced at a considerable distance from the objects.

In reducing a picture, this objection does not apply, as all the objects represented are on the same plane; but if the picture contain much diversity of colour, the tone of the copy is incorrect, because the power of absorbing light varies in different colours. Engravings or pictures having no violent colour (as, for instance, those of Rembrandt), are well adapted for the daguerreotype process, and the result is in every respect satisfactory.

Cases sometimes occur in which this application of science in aid of art may be of great service; as for example, when the proprietor of a picture objects to lend it for several months to be engraved, a correct fac-simile, reduced to a convenient size, may be obtained in a few minutes, from which the engraver may execute his work. In illustration we subjoin an engraving taken from a daguerreotype impression of a drawing by the late Mr. Müller. It represents the laboratory of Mr. Morson, and we select the subject as being appropriate to this journal; having been favoured with a daguerreotype copy, and considering this a suitable manner of acknowledging the obligation.

The application of the daguerreotype process to the purposes of the engraver is not new. One of the most popular portraits of the Duke of Wellington was obtained in this manner. His Grace having sat for a daguerreotype portrait, and not being pleased with the result, declined to take it. The portrait was afterwards sold to a publisher, and Mr. Ryall produced from it a very fine engraving, which has been most extensively circulated. We have been informed that several thousand pounds have been realized by the speculation. This has induced the publisher to repeat the experiment, and another plate of larger dimensions is in progress and almost completed by the same eminent engraver, who has displayed his skill by imitating the fine effect of the daguerreotype, and avoiding the defects above alluded to.

R. BRANSTON

TRANSACTIONS
OF
THE PHARMACEUTICAL SOCIETY.

PHARMACEUTICAL MEETING,
NOVEMBER 11th, 1846.

MR. MORSON, VICE-PRESIDENT, IN THE CHAIR.

A paper was read

ON THE MALAMBO BARK OF THE PROVINCE OF CARTHAGENA, SOUTH AMERICA.

BY W. HAMILTON, M.B.

In the third volume of the *Pharmaceutical Journal*, page 169, I observed an interesting and instructive paper by Mr. Ure, on the *Malambo* or *Matias* bark, of New Granada, with some notice of its sensible qualities.

Having, as far back as the year 1825, received a portion of bark, under the former of these names, from my indefatigable correspondent, Edward Watts, Esq., British Consul at Carthagena, accompanied by extracts from some of the Spanish writers on the natural history and productions of that province, detailing its medicinal properties, but without furnishing any clue to the localities in which it is to be found, or the botanical characters of the tree from which it is obtained, I turned with some eagerness to Mr. Ure's paper, in the hope of meeting in it some portion of that information which I had failed to procure from other sources; but in this expectation I was disappointed.

It appears from Mr. Ure's paper, that a bark, known by the name of *Malambo*, was received in Europe at least nine years before the date of the letter which accompanied the specimens sent home from Carthagena by Mr. Watts, of which an analysis, made by M. Cadet Gassicourt, appeared in the 2nd volume of the *Journal de Pharmacie;* and a second analysis, by the celebrated Vauquelin, is to be found in the 96th volume of the *Annales de Chemie*, from which, as Mr. Ure's paper informs us, the active constituents of the bark appear to be an aromatic volatile oil, a very bitter resin, and an extract soluble in water; but neither tannin, or any of the alkaloids of cinchona, were found, and only a slight trace of gallic acid.

But in the absence of a satisfactory description of the botanical characters, we are unable to determine the identity of the several specimens submitted to examination, and it remains as much a question as ever whether the tree which furnishes it belongs to the genus *Drymis*, as many botanists conjecture—to the genus *Quassia*, as M. Bonpland somewhat hastily concluded, or to some genus not hitherto submitted to botanical examination.

I regret my inability to throw more light upon this part of the subject than those who have preceded me; but, as connecting links in the medical history of a substance which, although known in Europe for upwards of thirty years, still slumbers in mysterious obscurity, and is far from being appreciated to the extent it merits, the following fragments of its local history may not be deemed wholly misplaced among the Transactions of the PHARMACEUTICAL SOCIETY.

In a work, on the natural productions of the province of Carthagena, by Don Jorge Lopez *, the date of which I unfortunately do not possess, that writer states,

> " Se dia, en la Provincia de Cartagena, un arbol de la misma altura de los *Quinos*, nombrada MALAMBO, cuja corteza, en mi concepto, tiene qualidades mas recommandables que la *Quina* ; ella abunda de un *Aromatico* tan constante y penetrante que jamas lo pierde, y por supuesto abunda tambien de partes *gomosas* muy utiles, à mi ver, a la naturaleza; es indigena de esta Provincia, y *se encuentra con abundancia*. Su corteza es que hablo, y creo que si se dedicasen los facultativos à hacer uso de ella, *la Quino perderia su concepto*. En este pais la, aplican à diversos males con ventaja conocida, en particular para los *pasmos, heridas, inflamaciones, males del estomago*. A mi ver produciria un efecto admirable en la *hidropesia*, y *fiebres malignas* ; por varias observationes que se han hecho, es eficax para las *asmas, reumatismo, disenteria, supreciones de mestruas*. En fin, en el pais, y, en particular, en los campos, es un remedio general aplicado, con felix suceso, en todas las enfermedadas referidas."

" A tree exists, in the province of Carthagena, of the stature of the cinchona, called the *Malambo*, whose bark, in my opinion, possesses qualities far superior to those of the cinchona. It abounds in an aroma, so durable and penetrating, that it is not impaired by any lapse of time, and must therefore, I imagine consist of gummy particles of great value to man. It is a native of this province, and very abundant. I speak of its bark, and were the faculty to employ it, cinchona would sink into disrepute. It is employed with known advantage in this country, in the treatment of various complaints, especially in spasms, wounds, inflammations, and disorders of the stomach. It would, I think, be highly beneficial in cases of dropsy and malignant fevers. Experience has proved its efficacy in asthma, rheumatism, dysentery, and menstrual obstructions, in my own practice. In fine, here, and in the country especially, it is an universal remedy, employed with the happiest effect in all the above-named complaints." In another rare and valuable Spanish work, in the possession of Mr. Watts, and from which that gentleman also favoured me with an extract, it is spoken of as follows :—

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* Don Jorge Lopez was an Apothecary, residing in the town of Carthagena, near the British Consulate, at the time Mr. Watts was there.

"El tercero [*] es el MALAMBO, cuja corteza aromatica es un antipasmodico eminente, de un amargo muy activo, febrifugo, y astringente. Lo hay con abundancia en la Provincia de Santa Maria, donde la aplican para curar *pasmo*, *calenturas*, *intermittentes*, y la *dysenteria* ; y tambien se encuentra en varios territorios de esta Provincia. Se hacen algunas extracciones de su corteza para la Habana, y alli lo usan con mucho suceso contra el *pasmo*, àque son muy propensos los negros ; y desde que tienen este specifico, casi no muero ninguno de el. Acqui no se aplica para nada, y hace pocos dias hemos vista morir un joven apreciable, por no haberle dado en tiempo este remedio. Es un vegetal importantissimo, que merece la atencion del Gobierno por las virtudes, que dexamos expuestas, y aplicaciones que se hacen de el en Santa Maria, como por el color y olor de su corteza, tenemos razones para creer sea del genero *cusparia*, ò *quino de Angostura*, de que se compone parte de la receta del difunto Dr. Mutis, para curacion de la *dysenteria*, y no dudamos asegurar que, à falta de esta, puede suplir la CORTEZA DEL MALAMBO."

"The third is the MALAMBO, whose aromatic bark is a powerful antispasmodic, containing bitter febrifuge and astringent properties of great activity. It abounds in the province of Santa Martha, where it is employed in the cure of *spasms*, *intermittents*, *calentures*, and *dysenteries;* it occurs also in various parts of this province (Carthagena). The bark is exported to the Havannah, where it is exhibited in the treatment of spasms (*tetanus ?*), to which the negroes are very subject; and since the adoption of this remedy hardly any deaths arise from this complaint. Here we make no use of it; and very lately (in 1810, at Carthagena) we have witnessed the death of a valuable young man from the neglect of exhibiting this remedy in sufficient time. It is a most important vegetable production, meriting the attention of government from the valuable properties it possesses, and the use made of it at Santa Martha. Both from the colour and smell of the bark, it would appear to belong to the genus *cusparia*,[†] or the *cinchona* of Angostura, which entered into the composition of the prescription of the late Dr. Mutis for the cure of dysentery ; and we have no hesitation in saying that the bark of the malambo may supply the place of that of the *cusparia*."

I distributed the specimens of the bark received from Carthagena among my medical friends here, and sent a portion to Dr. Bostock, of Great Coram Street, London. From the former I was unable to obtain any report; from the latter I received a reply, of which the following is a copy, dated London, 11th December, 1825 :—

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[*] The other three are the Guayacan, Ariza, and Guarumo.

[†] *Bonplandia trifoliata*. Had this conjecture been well founded, the resemblance must have struck Dr. Bostock, which does not appear from his letter to have been the case.

"SIR,—I regret that so long a time should have elapsed since the receipt of your letter. When it arrived I was from home; and have, since that time, been very particularly engaged. The account which is given of the bark is certainly very much in its favour, and its sensible properties are such as to render it probable that it may be an useful article of the Materia Medica. The only plan, however, to establish a point of this nature would be to send a quantity of the substance to some hospital or dispensary, where a number of trials might be made of it by any person in that kind of extensive practice. Its taste and odour would make one suppose that it may be found useful in affections of the stomach and bowels, as is the case with *Colombo* or *Angostura;* and even, if its properties were found to be very similar, still it might be very important to have a variety of articles. As I have no connection with any medical charity, it will not be in my power to give you any assistance, and I think it will be your best plan to apply to some practitioner in your neighbourhood. I am, &c. J. BOSTOCK."

Such was the abortive result of my endeavours to obtain a fair trial and full report of the value of this bark in practice. Since that time my specimens have been lost, and the subject was almost completely obliterated from my recollection, till the paper, to which I have referred, summoned it from the regions of oblivion, and induced me to seek for further information in the faded records of past correspondence.

Had such a body as the PHARMACEUTICAL SOCIETY been coexistent with the facilities for foreign and colonial correspondence which I then enjoyed, and of which I fully availed myself for the service of the public, the mystery which to the present moment involves the tree yielding this valuable bark would most probably have been long since cleared up, and botanists would not only be familiar with the characters of the inflorescence and fructification, but our Materia Medica might have been enriched by an elegant, agreeable, and active tonic.

From the accounts given by the Spanish writers, Don Jorge Lopez and Don Ignacio de Pombo, the friend and companion of the lamented Mutis, in the extracts just given from their respective works, we learn that the MALAMBO is a tree of common occurrence in the forests of Santa Martha and Carthagena, and may no doubt be found throughout the whole of the littoral chain which stretches from Punta Paria, in the east, to the Gulph of Maracaybo, and thence westward through the provinces of Santa Martha and Carthagena to the Gulph of Darien; and as the Flora of Trinidad is but an extension of that of the continent, it is by no means improbable that the MALAMBO is also a denizen of those unexplored forests which wave in perennial verdure beneath the British flag. It were, therefore, much to be desired that some of our merchants residing at Santa Martha or Carthagena, the localities clearly indicated in the foregoing extracts, could be induced to procure well authenticated specimens of the bark, seeds, fructification, and inflorescence of the tree so highly spoken of by the writers already named, and transmit them for examination to the PHARMACEUTICAL SOCIETY, the legitimate body for conducting such inquiries. The botanical characters being once clearly determined, it would be comparatively easy to ascertain its existence in the forests of Trinidad; or, if its value were found to correspond with the high character given to it, the seeds might be obtained and plantations formed in Trinidad and others of our islands, which would in process of time add much to the diversity and importance of their exports, and contribute somewhat likewise to the strength of the artillery which the medical practitioner employs to repel the assaults of mortality.

14, *Octagon, Plymouth.*

ON THE METHOD OF BREEDING AND REARING LEECHES IN SCINDE.

BY MR. J. SPARKS,

Member of the Pharmaceutical Society of Great Britain.

MY attention was called a few days ago by the Commissary-General of this province, a scientific and enterprising officer, to the manner in which leeches are bred in this country by the natives, and after witnessing some of the processes, it immediately struck me that it might offer some useful information to those who interest themselves in natural history, particularly in relation to medicine, and moreover, now that leeches are obliged to be brought into the English market from such distances, the publication of what has come under my notice might induce some one in Europe to try whether the same process, or one of a similar character, would have a successful result.

The leech dealers and breeders have always tried as much as possible to keep secret the method they adopted for propagating and rearing them; but the native (a Scindian) who showed me the plan he followed, having been treated kindly by the gentleman above alluded to, showed and explained everything to him with the greatest willingness, and did not evince any reluctance at my accompanying him.

The process, which I will now describe, is simple enough. The only difficulty that in any way presents itself is to find persons who will allow the leeches to feed upon them; but this is overcome by the love of gain so common to mankind in all countries.

About a dozen fine healthy leeches from three to five inches in length are selected, and allowed to glut themselves with blood from the human body. They are then taken and put into a chatty (a clay vessel used generally among the natives for holding and carrying water), capable of containing about two gallons of fluid; this is two-thirds filled with a mixture of earth and stiff black clay taken from the bed of the river, to which is added four handfuls of dried cow's or goat's dung, two handfuls of dried leaves of the Indian hemp, and two ounces of asafœtida, filled to within three inches with water, and well mixed. The chatty is then closed at the mouth with an earthen cover, smeared over with a coating of cow-dung and earth, and put aside in a sheltered spot for the space of nearly a month, at the expiration of which time it is broken, and in different parts of the clay are found about thirty cocoons, of a sponge-like material, about the size of a blackbird's egg. They are carefully torn open, and contain an albuminous liquid, in which are from ten to fifteen young leeches, which are put into a smaller vessel containing weak sugar and water, and at once begin swimming about, and appear perfectly healthy and lively. They are left in this mixture of sugar and water for ten days, or a little more, and then fed with human blood, and in two or three months are issued for the use of the hospitals.

I am told that the bites of leeches bred in this way never fester, but heal with great facility. The leeches that have bred, on being taken from the clayey mixture, are put in water, and in a few days are again fit for use or breeding.

The native who showed me the process, and opened a chatty in my presence, fancied that leeches were unisexual, and certainly their appearance would induce one to believe so, some having their bellies smooth and of a light green colour, which he called the females; the others having bellies of a darker hue with the rings more strongly marked, and altogether of a smaller size, these he called the males. Occasionally one or two of the old leeches die in the clayey mixture, and a few of the cocoons are found filled with blood instead of young leeches.

Many leeches used in the hospitals in some parts of India are not bred in this way, but taken from the rivers and streams: they are readily caught by the natives, who take a fresh sheep's or goat's skin, and sink it in the stream by means of stones laid above, the part of the skin attached to the skin being placed uppermost; after twenty-four hours the skins are taken out, and a number of leeches, varying in different districts from ten to thirty, are usually found attached to them. But the bites of these leeches will sometimes swell and fester, consequently preference is to be given to those bred in the manner above described, and whose only food has been blood abstracted from the human body.

The knowledge of this method of breeding has already saved government for this station alone several pounds sterling monthly, sufficient being reared by this native and his family to supply all the military hospitals, and the few private individuals residing here.

Kurrachee, Scinde, Aug. 1*st*, 1846.

ON THE PURIFICATION OF COBALT FROM ZAFFRE.

BY MR. B. H. PAUL,
Assistant in the Laboratory of the PHARMACEUTICAL SOCIETY.

HAVING found that the process for obtaining a salt of cobalt from zaffre, by the use of oxalic acid, was attended with considerable inconvenience, and did not yield a pure product, I have endeavoured to ascertain whether some other more advantageous process might not be employed; and among others it occurred to me that the process adopted by Mr. Phillips for the quantitative separation of this metal from nickel, if somewhat modified, would answer for the purification of zaffre. This process is founded upon the property possessed by nickel of being precipitated by potash from an ammoniacal solution of the two oxides, while cobalt is unacted upon.

The zaffre of commerce consists essentially of impure oxide of cobalt, obtained by roasting the sulpho-arseniuret of cobalt, or cobalt ore, and mixing the product with a quantity of sand; it contains, besides cobalt, iron, copper, bismuth, and nickel.

This is treated with hydrochloric acid, which dissolves all but the sand, and the liquid evaporated to free it from excess of acid; on the addition of water, a white substance remains undissolved, which contains so large a quantity of bismuth, as to render it worth preserving. The solution now contains cobalt, nickel, iron, copper, bismuth, and arsenic, and on passing sulphuretted hydrogen through it, copper, arsenic, and bismuth are precipitated; after driving off the excess of sulphuretted hydrogen by the addition of a little hydrochloric acid and boiling, oxides of nickel, cobalt, and iron are precipitated by ammonia, an excess of which dissolves the first two, and iron may be removed by filtration.

To the ammoniacal solution largely diluted with water, that has been well boiled to free it from air, potash is added, which precipitates nickel; it is then filtered, and sulphuretted hydrogen passed through it; this forms sulphuret of ammonium with the ammonia present, which, reacting on the oxide of cobalt, precipitates the sulphuret of cobalt. This, when well washed, may be treated with acids, to form any of the salts.

I have tried this process several times, and find it to answer perfectly, a pure salt may thus be obtained at a very moderate cost, and a considerable quantity of bismuth as a bye product. The objections to the use of oxalic acid are, that the nickel cannot be separated thus, as its oxalate is as insoluble as that of cobalt, and that the product being an insoluble salt, requires to be reduced with heat, in order to make the other salts.

CONCENTRATION OF COMMERCIAL NITRIC ACID.

Mr. Redwood laid before the meeting a specimen of very strong nitric acid, obtained by concentrating the ordinary nitric acid of commerce. He observed that as an unusual demand had recently arisen for the strongest nitric acid, in consequence of its use in the preparation of *Gun Cotton*, he thought it might be acceptable to some of the Members of the Society, to be informed of an easy and economical method of making such an acid. Independently of the requirement of this acid for the purpose to which he had alluded, the Pharmaceutical Chemist was directed to use nitric acid of sp. gr. 1.5, in some of the preparations of the Pharmacopœia, and therefore ought always to be able to obtain it when required. Acid of this strength was not commonly met with in commerce. Some of the manufacturers had recently commenced supplying it; but, as it is very prone to undergo decomposition, especially if exposed to the light, and as the water of the decomposed portion is transferred to that which remains, it could not be kept for any length of time without becoming weaker than the specified strength, and therefore ought to be made in small quantities as required. The process which he recommended for concentrating commercial nitric acid, consisted in mixing it with oil of vitriol, and submitting the mixture to distillation with a gentle heat. If commercial nitric acid, sp. gr. 1.42, be mixed with its own volume of oil of vitriol, and distilled by the heat of a sand-bath cautiously applied, a quantity of acid, equal to two-thirds that of the nitric acid introduced, might be drawn over, and this acid would have a specific gravity 1.514 to 1.52. This process had been recommended some years back by M. Millon, and it was the process alluded to in the last number of the *Pharmaceutical Journal*, in the paper on Gun Cotton. Millon and other Chemists, however, had stated that the nitric acid thus obtained, was always contaminated with sulphuric acid. Had this been the case, it would have entirely precluded the adoption of the process for preparing nitric acid for pharmaceutical purposes, but he (Mr. R.) had found, from repeated experiments, that if care was taken not to apply more heat than was necessary to bring over the nitric acid, and not to push the distillation too far, the distilled acid was quite free from sulphuric acid, and was in every respect as pure as that made by the process of the Pharmacopœia. In some respects, this process possessed advantages over that of the Pharmacopœia; the acid produced was stronger, and was less coloured by nitrous acid. His object, in alluding to the subject on this occasion, had merely been to direct attention to an easy and economical method of obtaining the strongest nitric acid that could be made, and at the same time to correct an error which had prevailed, to the effect that acid, so prepared, was not pure.

LIST OF MEMBERS, ASSOCIATES AND APPRENTICES (*continued*).

Elected October and November.

MEMBERS.

FARNHAM	Williams, Wm. Newland, West Street
LEIGH	Pogmore, John
YORK	Collier, William

MAJOR EXAMINATION.

Barkley, William	Little Tower Street, London
Porter, William	Maidstone
Whitfield, John	Worcester

MINOR EXAMINATION.

Baker, Frederick	19, Southampton Row

REGISTERED APPRENTICES.

APPRENTICES.	RESIDING WITH	TOWN.
Bollans, Edward	Mr. Cooper	York
Cray, William	Mr. Phillips	Wincanton
Ford, William	Mr. Wright	Macclesfield
George, Henry	Mr. Davis	Leominster
Hall, Giles K.	Mr. Reading	Warwick
Higgins, Thomas Sellors	Mr. Hall	Huddersfield
Job, John	Mr. Stannes	Tavistock
Joy, Francis Wm.	Mr. Deane	Clapham
Lawton, Dan.	Mr. Wood	Mossley
Marchant, Henry	Mr. Stutchbury	Demerara
Marshall, Martin	Mr. Roberts	Bourn
Morris, Philip	Mr. Iliffe	Nuneaton
Northcote, Augustus B.	Mr. Cornish	Plymouth
Peake, Henry	Mr. Lewis	London
Roberts, Edwin	Mr. Mackneil	Trowbridge
Smith, Henry	Mr. Davis	Leominster
Symonds, John Crane	Mr. Hollier	Dudley
Wall, Josiah	Mr. Dance	Fairford
Watts, Henry Thomas	Mr. Deane	Clapham
Whiting, Henry	Mr. Kett	Oxford
Willis, Edward A.	Mr. Bailey	Hounslow
Wood, Edward	Mr. Pratt	Chichester

ON XYLOÏDINE AND GUN-COTTON.

We have already, in our last number, given an account of the discovery by Braconnot, thirteen years ago, of the substance called xyloïdine, of some of the properties possessed by that body, and of the composition, which, from analysis, has been assigned to it.

On the attention of Chemists being directed to Professor Schönbein's *gun-cotton*, the method of preparing which was at first kept secret, it was soon suspected that this extraordinary substance would be found to be similar in composition and mode of preparation to Braconnot's xyloïdine. Experiment proved that carded cotton when treated with strong nitric acid, the agent used in producing xyloïdine from starch or paper, acquired the explosive property of the gun-cotton, and these two substances, *xyloïdine* and *gun-cotton* were consequently assumed to be identical in composition.

We pointed out, in the article above alluded to, page 211, the difficulty of reconciling the known property of gun-cotton, of undergoing complete resolution into gaseous matter in close vessels, with the elementary composition assigned to it, on the presumption of its being identical with xyloïdine. Experiments which have subsequently been made, tend to show that these two bodies differ in composition; and Professor Schönbein has himself shown that they differ in property, or Pelouze's xyloïdine is soluble in acetic acid, which is not the case with gun-cotton.

The following extract from a communication read before the Philosophical Society of Glasgow, on Wednesday, the 4th of November, by Walter Crum, Esq., F.R.S., Vice-President of the Society, contains the first evidence, adduced from experiment, to show the difference between xyloïdine and gun-cotton:

> "Nitric acid, strong enough to produce gun-cotton, speedily destroys the fibre of the wool, and produces a tenacious gummy substance, which mats it together, becoming white and brittle in water, and which seems a mixture of gun-cotton and xyloïdine. The cotton, also, absorbs nitric acid with great difficulty, from the impenetrable nature of the gummy matter, which is, to a certain extent, immediately produced. One portion of the cotton is thus completely disintegrated, before the acid can be made to reach another portion.* Oil of vitriol dissolves cotton-wool still more readily than nitric acid, instantly destroying any cotton fabric which it touches, and converting it into a gum, which is soluble in water.† Yet each of these acids has the remarkable quality of counteracting the corrosive effect of the other; so that if the two bodies are mixed together in the proper proportions, cotton-wool may be soaked in them for hours with little injury to its texture. I speak of pure nitric acid ($NO_5\,HO$), or nearly so, for the common aquafortis, of the specific gravity of 1.330, mixed in the same proportions, does not destroy the corrosive power of sulphuric acid.

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* This is not the case if the strongest nitric acid 1.52 be used in large quantities.—Ed.]

† Oil of vitriol, cold, does not dissolve the cotton when converted into gun-cotton.—Ed.]

"Nitric acid of the specific gravity of 1.52 gives the best result, mixed with an equal bulk, or rather less, of sulphuric acid, and the effect is instantaneous, for an immersion of one minute yields a result as good as two or three hours.

"The cotton, after being pressed, is thoroughly washed in cold water, and dried at a very gentle heat. In a steam-bath it is browned, and its qualities are much impaired. Its colour should be nearly white, and the fibre apparently as entire as before the application of the acid. In this state it explodes when heated, with an instantaneous flash, without smoke or residue; and leaving, if well divided, scarcely any tinge on paper.

"When the gun-cotton is heated in nitric acid it dissolves, and on the addition of chloride of barium no sulphuric acid appears.

"Heated with strong sulphuric acid the cotton is also dissolved—nitric oxide is given off in abundance, together with carbonic acid and carbonic oxide; afterwards the solution becomes black, and sulphurous acid is evolved.

"Finding that sulphuric acid, diluted with three-fourths of its bulk of water, formed an excellent solvent of the gun-cotton, without charring the solution, I employed it as a means of analysing that body.

"Two grains, prepared from nitric acid, of the specific gravity of 1.5 with four-fifths of its volume of sulphuric acid, and dried *in vacuo* over sulphuric acid, was mixed with half-an-ounce measure of the dilute acid, and let up into a glass tube over mercury. The tube was then inclined, and the flame of a spirit lamp applied to that part of it which contained the mixture. The cotton gradually dissolved, and a quantity of gas was obtained equal (after correction) to 1.86 cubic inches. The acid being then withdrawn as completely as possible from the tube, a strong solution of caustic soda was admitted, and 0.49 cubic inch of carbonic acid was absorbed. The remaining portion, equal to 1.37, was then transferred to a jar filled with a solution of sulphate of iron, inverted over water, and on being shaken with that liquid was all absorbed with the exception of 0.15 cubic inch, indicating 1.22 of nitric oxide. The residue of 0.15 was azote from atmospheric air, brought in chiefly by the cotton. Its oxygen, 0.4, had condensed a quantity of nitric oxide, which was estimated at 0.10 cubic inch. These together make 1.32 cubic inches of nitric oxide, or 0.43 grain.

"In a second experiment, upon a specimen prepared with acid of 1.5 and an equal volume of sulphuric acid, 2 grains yielded 0.436 grain of nitric oxide. This quantity represents 0.78 grain of nitric acid, and gives for the composition of the gun-cotton—

Cotton-wool, or cotton-wool and the HO of the nitric acid	61	100
Nitric acid NO_5	39	64
	100	

"In order to controul the analytical result, I made the following experiments, to learn the increase of weight during the preparation of the gun-cotton. Bleached and carded cotton, weighing 40 grains, was immersed in the mixture of acids, and washed in distilled water and dried. To guard against error from different states of dryness before and after the experiment, as well as from loss of weight in washing, it was accompanied through all the operations by another equal portion immersed in the same quantity of acid, to which had been added just enough of water to prevent the cotton from becoming explosive. The difference in weight between the two portions was assumed as the real increase.

"Three different mixtures were used.

"1. Nitric acid of spec. grav. 1.5, with four-fifths of sulphuric acid at 1.83.

"2. Nitric acid of 1.48, with an equal volume of Nordhausen sulphuric acid of 1.86.

"3. Nitric acid of 1.52, with an equal volume of Nordhausen sulphuric acid.

"4. Nitric acid of 1.43, with four-fifths of sulphuric acid of 1.83.

"The increase upon 100 of cotton-wool was in each of them as follows:—

1.	2.	3.	4.
70.0	67.2	66.2	64.7

"No. 2 exploded fully better than No. 1; Nos. 3 and 4 not nearly so well; and as 70 is a larger increase than I have obtained at any other time, I am inclined to adopt 68 as the maximum increase. These results prove that less water than is contained in SO_3 HO and NO_5 HO, is not advantageous. An increase of 68 gives for the composition of gun-cotton—

Cotton-wool	59.4	100
	40.6	68

"I have not had leisure enough to pursue the inquiry so far as to ascertain whether the nitric acid is in the state of NO_5 or of NO_5 HO. The difference between the analytical and synthetical results is insufficient to account for so much water as exists in NO_5 HO.

"The nearest expression for this compound is—

$$\begin{array}{lcr} C_{12}\ H_{10}\ O_{10} = 20.25 & \multirow{2}{*}{or} & 100.0 \\ \quad 2NO_5 \quad\ = 13.50 & & 66.6 \end{array}$$

but, if it be a chemical compound, its formula would be more correctly expressed by

$$C_{12}\ H_8\ O_{10}\ +\ 2NO_4$$

that of xyloïdine being

$$C_{12}\ H_9\ O_{10}\ +\ NO_4$$

"The gun-cotton, then, contains 10 atoms of oxygen available for uniting with 10 atoms of carbon, and forming, when fired in a confined position, 10 atoms of carbonic oxide, a gas in which the oxygen occupies twice the space that it does in carbonic acid gas. The nitrogen is at the same time set free, but 2 atoms of carbon, unless burned by atmospheric air inclosed along with it, must escape combustion until after the explosion. Fired in the open air the whole of the carbon is of course converted into carbonic acid.

"Two views may be taken of the constitution of this body. It may be viewed as a chemical compound of nitric acid and lignine united in definite proportions, these being, however, very different from the proportions in which they exist in xyloïdine, the only analogous compound yet known. But it may also be viewed, mechanically, as nitric acid held by attraction of surface or capillary force within the pores of the cotton.

"In order to make this view intelligible, I must quote from a paper read to this Society in February, 1843, on the manner in which cotton unites with colouring matter, in which I pointed out some of the phenomena of dyeing that had till then, and, as I believe, erroneously, been explained on chemical principles, while the facts appeared to me to be referable to an attraction of surface, such as porous bodies exert, without external pressure, in the condensation of gases, and in the withdrawal of salts from their solution in water. I called to mind the experiment of Saussure, in which a cubic inch of charcoal condensed 36 cubic inches of carbonic acid under the ordinary pressure of the atmosphere, and exerted, therefore, a force equal to 500lbs. to the square inch. And another experiment, in which cotton wool absorbed 70 to 100 times its volume of ammoniacal gas. I must here repeat that the fibre of cotton wool is an elongated cell—a thin cylindrical tube originally filled with water, but when dry, becoming collapsed, and nearly flat. Its sides, however, still allow water, and other fluids, easily to penetrate; and gaseous bodies not only pass freely through them, but enter in such quantity that they must be condensed within into liquid or solid bodies, by a remarkable force, which thus overcomes, to an immense extent, the power of evaporation and expansion which they would otherwise exert.

"The two bodies present are sulphuric acid, with a great avidity for water, and nitric acid, combined with one atom of water. Nitric acid cannot exist without that water, or a substitute for it. When so deprived it resolves itself into nitrous acid and oxygen. The fact, therefore, that the nitric acid remains undecomposed after mixture proves that it is not immediately rendered anhydrous. But the affinity between the nitric acid and its water is much weakened by mixture with sulphuric acid, and becomes so nearly balanced by the attraction of that body, that so soon as any new force, like that of a porous organised structure, is presented to it, the transference immediately follows, and the anhydrous nitric acid enters the fibre. Instances of decomposition from such a balance of affinities are now abundant; and although, in ordinary circumstances, nitric acid could not exist after its liberation, it can scarcely be doubted that the same force which, in the still narrower cavities of spongy platinum unites oxygen and hydrogen, is capable in those of cotton wool to preserve in combination the constituents of such a body as nitric acid.

"It may be found, and the point can only be settled by experiment, that the nitric acid exists in the state of hydrate within these pores, and that the membrane of which the cells of cotton are composed, has no other effect than that of separating the two acids—allowing the nitric acid to enter, to the exclusion of the sulphuric. In that case the nitric acid, being free from the counteracting effect of the sulphuric acid, must exert its characteristic action upon the interior of the cells, and line them with the gummy solution of xyloïdine, which from its impenetrable character may limit the action of the acid, and preserve it from the influence of external applications. But the entire preservation of the fibre renders the former view much the more probable.

"It is conceivable that such a chemical combination may exist,—the new body having all the physical characters of cotton wool, although nitric acid should have united with it, so that its atoms separate from each other every atom of the original structure: But this is a most improbable supposition, and I believe there is no example of organised structure either losing an element of its composition, or acquiring a new element without total disorganisation and change of form. Even crystallised bodies in similar circumstances fall to powder; and in the decay of the more complex forms of matter we see the destruction of all the architecture of the animal and vegetable world following their absorption of oxygen."

Other Chemists have been engaged in the examination of the gaseous products resulting from the combustion of gun-cotton. It was shown at a recent meeting of the PHARMACEUTICAL SOCIETY, that it is susceptible of combustion without the intervention of atmospheric air, some of it having been exploded in an exhausted receiver, by means of a heated platinum wire. The combustion under these circumstances, is accompanied by much less light than is manifested when it is exploded in the air, but there is no solid residue. The gas resulting from its combustion *in vacuo,* assumes a red colour on the admission of atmospheric air into the receiver, indicating the existence of deutoxide of nitrogen ($N O_2$) as one of the products of the combustion, and the contents of the receiver are found to be exceedingly irritating to the nose and fauces.

On Monday, the 16th of November, a paper was read before the Chemical Society of London, by Messrs. Porrett and Teschmacher, in which they gave the result of an examination of the products of the combustion of gun-cotton. They found the gases generated, to consist of cyanogen, deutoxide of nitrogen, carbonic oxide, carbonic acid, and hydrogen.

Now, Mr. Crum's representation of the composition of gun-cotton, is founded on the quantity of nitrogen, as $N O_2$, found in the evolved gases. He did not detect cyanogen, which, if present, would make the proportion of nitric acid in the gun-cotton greater than he has represented it.

Thus the composition of gun-cotton, is not, at the present time, by any means satisfactorily determined. Sufficient evidence, however, has been adduced to show that it differs in composition from xyloïdine, and that it contains a larger proportion than xyloïdine does, of the elements of nitric acid.

Professor Schönbein has not yet published his mode of preparing the gun-cotton, but we have been informed, on what we believe to be good authority, that it is essentially the same as that which has been generally adopted, and which is found practically to be the best, namely, that which consists in immersing the cotton in a mixture of strong nitric acid and oil of vitriol.

We have found an advantage in washing the gun-cotton in solution of ammonia before drying it, and believe this to be an improvement in the process, as it ensures the entire removal of any free sulphuric acid. The best gun-cotton is made with nitric acid, having a specific gravity not less than 1.5, mixed with about half its volume of good oil of vitriol. The cotton should not be immersed in the acid for more than two minutes; it should then be taken out and pressed, immersed in solution of ammonia, and then well washed with water, and dried by the heat of a water-bath;—or the ammonia may be used after the washing.

It may be obtained of equally good quality by using nitric acid alone, provided the acid be of sp. gr. 1.52 (see page 202), and that a large quantity of acid be used as compared to the cotton.

We presume that the advantage resulting from the use of oil of vitriol in the process, and the necessity, when nitric acid alone is employed, of adding a large quantity of acid to the cotton, depends upon the fact that the cotton takes the elements of *anhydrous* nitric acid, and the water previously in combination with the acid thus appropriated, tends to dilute the remaining portion of acid, so that, if there be not a large quantity of acid present, its strength becomes so much reduced, that its action on the cotton is materially altered. If the cotton be immersed in nitric acid, the sp. gr. of which is less than 1.5, it will be partly converted into a gelatinous mass, which, on being washed and dried, becomes pulverulent. This pulverulent part, although combustible, is not explosive—it is probably in the state of xyloïdine, and it is important in making gun-cotton, to avoid the formation of any of this pulverulent matter.

The physical characters of good gun-cotton are, that it shall present, as nearly as possible, the same appearance as the cotton did before being treated with acid; it should be white, nearly as flexible and soft as ordinary cotton, and quite free from any particles of xyloïdine. When placed in the polariscope it does not present the phenomena of depolarization like common cotton.

Much difference of opinion continues to exist as to the extent to which this new combustible is likely to supersede the use of gunpowder. A series of experiments have been made under the direction of the Board of Ordnance, to ascertain whether cotton might be substituted for powder in the army, but the report which has been made, is adverse to the claims of the cotton. In the different trials which have been made, we believe it has been proved, that a given weight of the gun-cotton produces a greater amount of explosive force when exploded, than a similar weight of gunpowder; the explosion of the cotton, too, is unattended with the evolution of smoke which always accompanies that of gunpowder. But here the advantage on the side of the cotton ceases. On the other hand, there are several objections to the use of gun-cotton, especially in the army and navy. Its price, and its bulk, would be likely to prove obstacles to its use; the rapidity of its combustion renders it unsuitable for any other than small guns; the formation of nitrous acid, as one of the products of its combustion, would cause the rapid corrosion of the guns, and the low temperature at which it ignites, must preclude its use in warfare, for the guns become so much heated by repeated firing, that the cotton would be exploded on loading them.

For blasting rocks, the gun-cotton is considered to possess advantages over gunpowder in every respect, excepting the price. It is said to have been already substituted for gunpowder at Berlin, for producing scenic effects in the theatres, the absence of smoke being a great advantage.

It is reported that Professor Schönbein has sold his patent, securing the sole right of manufacturing gun-cotton in England, Ireland, and Scotland, for the sum of £40,000. We should much rather be in the condition of vendor than purchaser in this case. We have heard from another source that the amount is £4500, a more likely sum.

AMORPHOUS QUININE.

SPECIFICATION OF THE PATENT.

To all to whom these presents shall come, I, John Lloyd Bullock, of Conduit Street, Hanover Square, Chemist, send greeting: Whereas, Her present Most Excellent Majesty Queen Victoria, by Her Royal Letters Patent under the Great Seal of the United Kingdom of Great Britain and Ireland, bearing date at Westminster the 12th day of May, in the ninth year of Her reign, did for Herself, Her heirs, and successors give and grant unto me, the said John Lloyd Bullock, my executors, administrators, and assigns, Her especial licence, full power, sole privilege, and authority, that I the said John Lloyd Bullock, my executors, administrators, and assigns, or such others as I the said John Lloyd Bullock, my executors, administrators, or assigns should at any time agree with and no others, from time to time and at all times during the term of years therein expressed, should and lawfully might make, use, exercise, and vend, within England, Wales, and the town of Berwick-upon-Tweed, my invention of "Improvements in the Manufacture of Quinine," being a communication from a foreigner residing abroad; in which said Letters Patent is contained a proviso that I the said John Lloyd Bullock shall cause a particular description of the nature of my said invention, and in what manner the same is to be performed, by an instrument in writing under my hand and seal, to be enrolled in Her said Majesty's High Court of Chancery, within six calendar months next and immediately after the date of the said in part recited Letters Patent, as in and by the same reference being thereunto had, will more fully and at large appear. Now know ye, That in compliance with the said proviso, I the said John Lloyd Bullock do hereby declare that the nature of my said invention, and the manner in which the same is to be performed, are fully described and ascertained in and by the following statement thereof; that is to say, in the preparation of quinine, sulphate of quinine, or other saline compounds, after the separation of the crystalline sulphate or other salt, there remains a dark coloured mother liquor, which being treated by the manufacturer with an alkali or alkaline carbonate, yields a precipitate, which, in drying agglutinates into a resinous-like mass, called by the manufacturer *chinoidine* or *quinoidine*, which is regarded as of little value. Sometimes the said mother liquor is simply evaporated—the residue is then a mixture of chinoidine with an acid. My discovery includes,

First. The preparation of either of these products in a purified state, so as to enable me to reduce it to a powder, which I call purified chinoidine, and the forming of a solution of this in alcohol or other vehicle and certain saline compounds.

Second. The separation of amorphous quinine, and reducing it to powder from the chinoidine or purified chinoidine by means of a solution in ether; and also the forming solutions of amorphous quinine in alcohol or other vehicle and saline compounds.

Third. The substance left after digesting in ether, which having basic properties I call basic extract of bark. A solution of the same in alcohol or other vehicle and saline compounds of the same.

First,

PREPARATION OF PURIFIED QUINOIDINE OR CHINOIDINE.

I take three pounds of the residue of quinine manufacture, termed chinoidine (which should be soluble in alcohol and in dilute sulphuric acid and insoluble in water). Nine ounces by measure of concentrated sulphuric acid diluted with one gallon of water, and dissolving the chinoidine therein, I then pass sulphuretted hydrogen through the solution for nine hours, for the purpose of precipitating metallic matters and other impurities. The mixture is then to be filtered through paper or other suitable material, as is well understood by Chemists; it is then boiled to drive off excess of sulphuretted hydrogen, and an alkali or alkaline carbonate added, to precipitate the chinoidine. I use commonly for the above named quantity, three pounds of carbonate of soda, dissolved in one gallon of distilled water. The precipitate obtained is then to be well washed with distilled water, and dried over a water-bath, towards the conclusion of the drying, and in order to dry it more effectually, I place it in a chloride of calcium bath, and heat it a few degrees higher than 212°. It is then reduced to powder, and kept in well-closed bottles. This purified chinoidine may also be kept in solution in alcohol or other vehicle, or made into saline compounds. I prefer to sell it in a state of powder, it being more convenient in that form. I also prepare various saline compounds of purified chinoidine, by taking at the rate of one-twelfth less than of the amorphous quinine hereafter explained, and mix it with acids as hereafter explained in respect to amorphous quinine. In some cases it is desirable to dissolve the purified chinoidine in alcohol before mixing with the acids. These saline compounds I prepare for sale, either in solution or by evaporating them to the solid state, and reduce them when they will allow of it, to powder. In all cases, the preparation should be kept in well closed bottles.

THE PREPARATION OF AMORPHOUS QUININE.

I take three pounds of chinoidine as before, or in the purified state as above described (for this purpose it is best to use it before it is fully dried) and mix it well with twice its weight of pure sand, and digest in nine parts of ether (commonly known as sulphuric ether). The specific gravity of the ether I believe most suitable, being about 735;

I stir up the mixture three or four times during the digestion, which should continue twelve hours, and pour off the solution. To the residue I add nine pints of fresh ether, and proceed as before: I mix the two solutions, and allow them to settle; when perfectly bright, I pour off the fluid from the sediment into a retort or suitable vessel, and distil off the ether by means of a water-bath. The substance left in the vessel is to be dried in the same manner as is directed for the purified chinoidine. To this residue I apply the term *Amorphous Quinine*. The saline compounds are prepared by taking one equivalent of an acid in solution, and dissolving in it an equivalent of the amorphous quinine, considering carbon 6, oxygen 8, hydrogen 1. I take one hundred and sixty-two parts of amorphous quinine to each equivalent of acid, all which is well understood by Chemists, and I form basic neutral or acid salts, in the usual way.

BASIC EXTRACT OF BARK.

The residue left upon treating chinoidine with ether, in order to extract the amorphous quinine, contains also valuable medicinal matter. I take any given amount of this product, and calculating the amount of dry substance it contains, treat it with six times its weight of alcohol, generally preferring it 56° over-proof. I decant the clear fluid, and evaporate it to dryness, in the same manner as with amorphous quinine. To this product I apply the designation *Basic Extract of Bark*, or I prepare this as follows:—To three pounds of the dry residue, as above, I add nine ounces by measure of concentrated sulphuric acid diluted with one gallon of water, and dissolve the same; and through this solution I pass sulphuretted hydrogen, and proceed in the same manner as when producing purified chinoidine, and in making solutions and saline compounds therefrom.

Having thus described the nature of the invention and the manner in which the same is to be performed, I would have it understood that I do not confine myself to the details herein described so long as the peculiar character of either part of the invention be retained; but what I claim is,

First, The manufacture of what I have called "Purified Chinoidine," by purifying and reducing that matter to a state of powder, as herein described; and I also claim the making alcoholic and other solutions of such purified chinoidine and also the producing saline compounds thereof.

Secondly, I claim the manufacture of what I have called "Amorphous Quinine" by separating the matter soluble in ether from other matters, as herein described, I also claim the preparing alcoholic, ethereal, and other solutions thereof, and I also claim the preparation of saline compounds of the same.

And, thirdly, I claim the manufacture of what I have called "The Basic Extract of Bark," by separating such product by ether from the soluble matter, and preparing such extract as herein described, and producing alcoholic and other solutions and saline compounds thereof.

In Witness whereof, I, the said John Lloyd Bullock, have hereunto set my hand and seal this twelfth day of November, in the year of our Lord one thousand eight hundred and forty-six.

John Lloyd Bullock.

[From the above specification of Mr. Bullock's patent it appears, that the substance which he has been selling under the name of *amorphous quinine*, he now proposes to call *purified quinoidine or chinoidine*. Had he adopted this course in the first instance, he would have escaped the criticism to which he has exposed himself, for offering to the profession a product, containing 30 per cent. of foreign matter, as the *pure alkaloid of the cinchona bark.*

But the exclusive manufacture of *purified quinoidine*, or its combinations with acids, cannot be secured by this patent. Quinoidine and sulphate and muriate of quinoidine, as pure as any prepared by the patentee, have for many years been articles of commerce in this country, and may be found in some of the old price lists of Messrs. Howard and Kent, of Stratford. The use of sulphuretted hydrogen as a means of purifying quinoidine is not new, but is of doubtful advantage.

With this specification before the public, we presume that the patent *amorphous quinine* will in future be soluble in ether. On examining some of it, *recently* supplied by the patentee, we find it to be soluble, with the exception of a slight residue, arising probably from the occurrence of a partial change during the processes of evaporation and drying.—Ed.]

NATURE AND COMPOSITION OF FARINACEOUS FOODS.

Inquiries having been made respecting the nature of several farinaceous foods in common use, the following statement will serve as a general answer to our Correspondents on the subject:

Hard's farinaceous food has been for many years before the public. It consists of wheat flour slightly baked. It is very carefully prepared, on which account it is much in repute. The poor frequently employ *baked flour* as a substitute.

Densham's farinaceous food is composed of three parts of wheat flour and one-part of barley meal slightly baked. The barley-meal renders this preparation slightly laxative.

Ervalenta is the meal of the lentil (*Ervum lens*). It is used, with treacle, to counteract habitual constipation.

English arrow root is potato starch.

The Prince of Wales's food is potato starch.

Bright's custard powder is a preparation of potato starch.

Bright's nutritious farina is potato starch aromatized.

Gardiner's alimentary preparation has recently been introduced as a "production prepared after the instructions of the celebrated Professor Liebig, with a due proportion of nitrogenous matter indispensably requisite for nourishment." It is rice-meal very finely ground.

ANCIENT CHEMCIAL SYMBOLS.

In consequence of an inquiry from a correspondent, we offer a few remarks on the hieroglyphics painted on the show-bottles in the Druggists windows.—Many of them are without meaning, being the invention of the painter. Those which are intelligible are, for the most part, the characters formerly used to designate the seven anciently known metals, and which are the same as those employed by the astrologers to represent the planets. To these must be added the sign ✠ (a Maltese cross), indicative of acrimony, indicated by the sharp points surrounding it. The astrological symbols employed by Chemists to represent the ancient metals aptly express the properties, real or fancied, of the substances they were intended to designate. *Gold*, formerly called *Sol*, was represented by a circle ☉, which represented its perfection, its immutability, its density (for a sphere contains the greatest amount of matter under the smallest surface), and its simplicity; for the equality of the radii of a circle represents the equality of the parts and homogeneous nature of gold. *Silver*, termed *Diana* or *Luna*, was characterised by ☾, because it was thought to be half gold, whose inward part turned outwards makes pure gold. Neither gold nor silver was supposed to contain any thing acrid or corrosive. *Quicksilver*, called *Mercury*, was represented by ☿ (a symbol compounded of the hieroglyphic for gold, silver, and acrimony), indicating that its real nature or inmost part was pure gold, but that its top, face or superficies appeared like silver, whilst there lurked beneath something acrid and corrosive. Remove from it the appearance of silver, and its sharp corrosive quality, and you have pure gold *aurum vivum*. *Copper*, termed *Venus*, was indicated by ♀, showing that this metal was, for the most part, gold combined with acridity. Remove the latter and you have real gold. Copper wants the silver face of mercury. *Iron*, called *Mars*, was represented by ♂, that is gold with acridity; for iron was thought to consist principally of gold profoundly concealed in it by a very evident acrimony, which, however, is only half that contained in mercury and copper, and, therefore, is represented by a kind of barbed point inclined to the right, a portion only of the sign expressive of acridity, and farther significative of the use of this metal in the service of the God of War. *Tin*, termed *Jupiter*, was represented by ♃, indicating that it was one-half silver, the other half acridity. *Lead* was called *Saturn* "not only," says Fourcroy, "because they suppose this metal to be oldest, and, as it were, the father of all the others, but also because it was considered as very cold; because the property of absorbing, and apparently destroying, almost all the metals was attributed to lead in the same manner as fabulous history affirms that Saturn, the father of the gods, devoured his children." Its symbol was ♄, indicating that it was nearly all corrosive, but with some resemblance of silver.

ON THE DIFFERENCE BETWEEN SOAPS PREPARED BY THE OLD AND NEW METHOD, AND ON ADULTERATIONS OF SOAP.

BY DR. STÖCKHARDT.

In consequence of the great quantity of soda which is at present produced in almost all the European states, and sold at a comparatively low price, and of the greater facility with which cocoa-nut oil and palm oil can be obtained, even at a cheaper price, than tallow, the old method of boiling soap has been for the most part replaced by the *quick* method, by which a greater amount of soap can be obtained from the same quantity of tallow or oil in a shorter time, and with less consumption of fuel, the soap having at the same time a better appearance, and giving a better lather than that prepared after the old method.

Dr. Stöckhardt has, in a very elaborate article on this subject, pointed out on what this difference rests. The quick method of manufacturing soap is given in some Pharmacopœias, *e.g.*, *Pharm. Boruss.* and *Pharm. Bavaria*, for the preparation of medicated soap. A concentrated solution of caustic soda is prepared from carbonate of soda, by means of quick-lime. With this the fatty matter is saponified at a temperature of only 50° to 60° R. (144°5 to 167° Fah.) for two hours in one and the same water, without separating any under-ley, so that all the saline constituents of the crude soda, together with the excess of soda, and glycerine remain in the soap, and thus increase its weight and solubility. With tallow only and without cocoa-nut-oil, which is used in this method of manufacturing soap, this quick process will very likely not succeed; but the cocoa-nut-oil imparts to soap the quality of lathering much more than soaps prepared only from tallow and olive oil.

The soap manufactured after this method Dr. Stöckhardt calls *amorphous*, *filled or saturated* (gefüllte), or *watery* soap, in contradistinction to the *granular* soaps, which were prepared according to the old method by repeatedly boiling with diluted ley in many waters.

Several sorts of Chemists' soap have been analyzed, and the following results obtained:

The examined soaps were,

I. Granular Soaps, viz., such as were manufactured after the old method.

1. *White tallow soap*—hard yellowish white, crystalline. By drying they were slightly encrusted with carbonate of soda.

2. *Marbled tallow soap*—with grey streaks, harder than No. 1, not encrusted when dried.

3. *Bleached palm soap*—less hard, yellowish grey, thickly encrusted with carbonate of soda when dried.

4. *Unbleached palm-oil soap*—more impure and darker in colour than No. 3, also much encrusted when dried.

5. *Fresh boiled white tallow soap*—the same as No. 1, only less hard.

6. *Fresh boiled marbled tallow soap*—like No. 2, only less hard.

The dried granular soaps contained:

From	61	to	72	per cent. of	fatty acids.
"	7	"	8	"	combined soda.
"	1	"	2	"	free soda.
"	1	"	3	"	foreign salts.
"	2	"	4	"	glycerine.
"	15	"	24	"	water.

The fresh granular tallow soaps contained

From	58.0	to	61.0	per cent. of	fatty acids.
"	6.8	"	7.4	"	combined soda.
"	25.6	"	28.8	"	water.

The proportion of free soda, foreign salts, and glycerine, did not vary much.

II. AMORPHOUS SOAPS, viz. those prepared according to the new method:

7. *White tallow soap*—hard, white, smooth, uniform, slightly encrusted with culinary salt.

8. *Marbled tallow soap*—like No. 7, red streaked not encrusted, but showing throughout spots of salt.

9. *Grey tallow soap*—hard, smooth, very much encrusted with salt.

10. *Palm-oil soap*, yellow, smooth, not very hard, and but slightly encrusted.

11. *Cocoa-nut oil soap*—very white, hard, brittle, and but slightly encrusted.

12. *Fresh boiled white soap*—rather hard, white, smooth, scarcely encrusted.

13. *Fresh boiled less white soap*.

The dried amorphous soaps contained

From	42.8	to	49.6	per cent. of	fatty acids.
"	5.8	"	7.0	"	combined soda.
"	1.0	"	3.0	"	free soda.
"	1.1	"	4.5	"	foreign salts.
"	4.5	"	5.9	"	glycerine.
"	33.2	"	39.1	"	water.

The fresh amorphous tallow soaps contain

From	38.8	to	40.8	per cent. of	fatty acids.
"	5.3	"	5.4	"	combined soda.
"	41.5	"	43.6	"	water.

These tables show that the dry *granular* soap contain from 71 to 82 per cent. active parts [real soap]; and from 29 to 18 per cent. water and impurities; whilst the dry *amorphous* soaps contain from 52 to 57 per cent. of the first; and from 48 to 43 per cent. of water and impurities.

On purifying the different sorts in a boiling solution of culinary salt, the *granular soaps* yielded from 70 to 83 per cent.; the *amorphous* only 50 to 58 per cent. of purified and dried soap.

In unison with this were the proportions of excess of hydrate of soda and hygroscopic qualities, viz. 100 parts of *granular soap* in a hot solution required only 3 to 5 parts of bitartrate of potash to separate the fatty acids; 100 parts of *amorphous soap* required 5 to 9 parts of bitartrate; 100 parts of dry *granular* soap in the damp vault attracted from 7 to 28 parts of water, whilst 100 parts of the *amorphous* soap attracted from 25 to 31 parts of water.

It was important for the preparation of opodeldoc to determine the quantity of hot spirit of wine required to form on cooling a gelatiniform mass with the respective sorts of soaps. Of the *granular soaps*, 4 parts of the marbled tallow soap, and 4½ parts of white tallow soap, were required to form on cooling, with 100 parts of spirit of wine, a jelly; of the bleached palm oil soap 9 parts were required for 100 parts of spirit of wine. Of the *amorphous soaps*, 7 parts were required of the marbled, and 8½ of the tallow soap, and 14 of the palm-oil soap for 100 parts of spirit of wine.

The tallow soaps made according to the quick process always appear to contain some cocoa nut oil. This is shown by comparing the melting and congealing points of the fatty acids (resembling stearic acid) separated from the soaps. The fatty acids of *granular tallow soap* began to melt at from 44° to 45° C. (from 111°.2 to 113° Fah.); and that of *granular palm-oil soap* at from 38° to 39° C. (from 100°.4 to 102°.2 Fah.); that of *amorphous tallow soap* at from 30° to 33° C. (from 86° to 91°.4 Fah.); that of palm-oil soap at 27° to 28° C. (from 80°.6 to 82°.4 Fah.), and that of cocoa-nut oil soap already at 23° to 24° C. (from 73°.4 to 75°.2 Fah.)

Dr. Stöckhardt has also observed, that

100 parts of fatty acid from tallow combine with 12 parts of soda
100 " " " palm-oil " " 13 " "
100 " " " cocoa-nut oil " 15 " "

The *adulteration* of soap is effected in two ways, viz. 1. By substituting for, or mixing with, the more expensive oil of almonds or olive oil, cheaper seed oils, *e. g.* poppy-seed oil, hemp oil, and beech-nut oil, or the ox and sheep tallow with commoner animal fats. 2. By making cheap admixtures, in order to increase the bulk and the weight of the soaps, as well as the profit of the manufacturer. Thus Dr. Arends says, that he examined a soap, which contained a considerable proportion of powdered heavy-spar. This adulteration is, however, easily discovered, because sulphate of baryta is not soluble in spirit of wine. The same is the case with soap adulterated with lime, marl, powdered soapstone, pipe clay, or white potter's clay.

Silicate of potash was first employed in England for the manufacture of soap, and has already been treated of several times in the *Repert. fur Pharm.* by Vogl, Frickhinger and others. This English and Scotch "Silica Soap," for which Mr. Sheridan has taken out a patent, is perhaps manufactured for various technical purposes, and preferred, like the soft and resinous soap, to the usual oil and tallow soaps; and therefore is not to be considered as an adulteration. The silicate of potash is also insoluble in spirit of wine, and may be easily discovered.

Dr. Geiseler has examined a soap which contained only 33 per cent. of pure soap and 51 per cent. animal glue, which was insoluble in spirit of wine of 80 per cent., and formed with boiling water a jelly.—*Buchner's Repertorium.* Band lxiii., p 186.

ANALYSIS OF SOCOTRINE ALOES.

BY M. EDMOND ROBIQUET.

The specimen if aloes examined, was obtained from M. Chevallier; it was found to contain the following constituents in 100 parts :—

Pure aloes (*Aloëtine*)	85.00
Ulmate of potash	2.00
Sulphate of lime	2.00
Carbonate of potash	traces
Carbonate of lime	
Phosphate of lime	
Gallic acid	0.25
Albumen	8.

ON ALOETINE.

BY M. E. ROBIQUET.

To obtain the *aloëtine*, or *purified aloes*, commercial aloes, reduced to powder, was exhausted with cold distilled water, by which means none of the salts present, excepting the ulmate of potash, and a small quantity of sulphate of lime and carbonate of potash, are taken up. This solution was evaporated over a water-bath until reduced to one-half, and an excess of neutral acetate of lead was then added, which threw down a light flocculent yellow precipitate, consisting of a mixture of gallate, ulmate, and albuminate of lead, and containing traces of carbonate and of sulphate of lead.

The solution now contained, in addition to the aloes, acetate of potash, and acetate of lime, resulting from double decomposition, and the excess of acetate of lead. On adding a sufficient quantity of ammonia, the precipitated oxide of lead carried down all the aloes contained in the liquor, forming a kind of lake of a pure orange-yellow colour, passing in a few minutes under the influence of the solar light, to a greenish-yellow. This lake, quickly separated and washed with boiling water, was decomposed by a current of sulphuretted hydrogen, atmospheric air being excluded. On the conclusion of this operation, the sulphuret of lead was covered by a perfectly colourless supernatant liquor, which, on being carefully decanted and evaporated *in vacuo*, afforded no crystals, but dried in scales, having the appearance of a kind of varnish, with a very slight tint of yellow.

I used the product thus obtained in my examination for the presence of nitrogen, and also in the analysis with oxide of copper. To distinguish it from the crude aloes I have called it *aloëtine*.

Aloëtine is obtained in the form of nearly colourless scales, if in the process air be as much as possible excluded. It is very soluble in water and in alcohol, little soluble in ether, and completely insoluble in the fixed and essential oils. On calcination in close vessels, a shining voluminous residue is left, which entirely disappears on incineration in the air. The aloëtine is not coloured by either the *per* or *proto* salts of iron; and it gives no precipitate with acetate of lead; in other respects its reactions are similar to those of socotrine aloes.

If the aloëtine be dried in contact with air, the scales, instead of being colourless, will have an intense red colour, due to a slight absorption of oxygen. With the exception of the difference in colour, it undergoes no modification in its chemical properties, and probably analysis would hardly detect any difference between that altered by the contact of air, and that prepared *in vacuo*. The process may therefore be rendered much more easy by drying the product over a water-bath, or by exposure to the heat of the sun, when it is not desired to obtain the aloëtine in a state of absolute purity.

Aloëtine possesses in a high degree the purgative properties and bitter taste of ordinary aloes. For medicinal use eight parts of aloëtine are equivalent to ten parts of socotrine aloes and fifty parts of Cape aloes.—*Journal de Pharmacie.*

ON BERBERIN.

BY TH. FLEITMANN.

Buchner, the discoverer of berberin, regarded this substance as a sub-acid, or colouring matter. Fleitmann, however, after an elaborate examidation of it, declares it to be a powerful organic base.

The following table represents the composition of berberin and its salts:

1.	Pure crystallized berberin	$C_{42}H_{18}NO_9 + 12HO$
	Pure berberin, dried at 212° Fahr......	$C_{42}H_{18}NO_9 + 2HO$
2.	Hydrochlorate of berberin crystallized	$C_{42}H_{18}NO_9 + HCl + 5HO$
	" " dried at 212° Fahr.	$C_{42}H_{18}NO_9 + HCl + HO$
3.	Supersulphate of berberin	$C_{42}H_{18}NO_9 + 2SO_3 + 2HO$
4.	Superchromate of berberin	$C_{42}H_{18}NO_9 + 2CrO_3$
5.	Nitrate of berberin	$C_{42}H_{18}NO_9 + NO_5 + HO$
6.	Chlorate of berberin	$C_{42}H_{18}NO_9 + ClO_5 + HO$
7.	Platinum-chloride of berberin..........	$C_{42}H_{18}NO_9 + HCl + PtCl_2$.

The polysulphuret of ammonium has a very remarkable influence on berberin. Sulphuret of ammonium saturated with sulphur was added to a solution of muriate of berberin; immediately a brown-red precipitate was obtained. This was separated by a filter and washed. It was then found to be a sulphur combination, in which the sulphur no longer existed in the form of sulphuretted hydrogen, and could no longer be detected by the addition of a solution of lead. Moreover, no development of gas took place, nor could the smell of sulphuretted hydrogen be perceived, on the addition of concentrated hydrochloric acid. From a solution of it in water, a beautiful red precipitate was obtained by neutral acetate of lead. The combination had a very disagreeable smell, somewhat like mercaptan, and which did not even disappear after the application of an acid. When muriatic acid was added to the deep-red solution of it, a lighter colour was immediately produced, and, after a short time, yellowish-red crystals were deposited, which also gave, with a solution of lead, a red precipitate.—*Ann. der Chem.* lix.

ON ARTIFICIAL ULTRAMARINE.

BY PROF. C. BRUNNER.

PROFESSOR BRUNNER made numerous attempts to procure artificial ultramarine according to the method described by Gmelin; but the products were all inferior to the natural pigment. Ultimately, however, he succeeded in obtaining a satisfactory result. The materials which he employed, were, firstly, seventy parts of *silica* from Longnau, in the canton of Bern, in the form of pure siliceous sand, and which was obtained for technical purposes, by mining, under the name of *Huppererde*. It was reduced to a very fine powder, and washed. Secondly, instead of alumina, the author employed 240 parts of recrystallized potash-alum (as free from iron as possible); this was converted into *alumen ustum*, and preserved in well-closed vessels. Thirdly, 144 parts of flowers of sulphur. Fourthly, 48 parts of finely powdered charcoal. Fifthly, 240 parts of anhydrous carbonate of soda. These ingredients were intimately mixed together. From half an ounce to an ounce (1—2 *Loth*) of this mixture, with from one to one pound and a half of the coarsest iron shot were introduced into a well-tinned copper bottle, of the capacity of about four wine pints. The whole was shaken for from five to ten minutes, and then sifted, by which the shot were separated and left on the fine sieve.

On the nicety with which this mixing is effected, depends the success of the process, as the powder must show, even under a magnifier, a perfect uniformity of colour. The mixture is now placed in a Hessian crucible, to which the lid is to be cemented, and exposed for about an hour and a half to a red heat, but not a higher temperature. If the operation succeeds, the contents of the crucible form a loosely conglomerated, partly greenish-yellow, partly reddish-yellow mass, of about two-fifths of the original volume. When it is brownish and melted, the heat employed has been too strong. The mass is now placed in a dish with water, which dissolves the sulphuret of sodium, and leaves behind a greenish-blue powder, which is to be treated with boiling water, as long as this extracts any sulphuret of sodium from it.

The product is now to be intimately mixed with its own weight of sulphur, and one-and-a-half its weight of dry carbonate of soda, and then burnt as before; whereupon it is again heated with sulphur and carbonate of soda, and washed, but this time more carefully, until acetate of lead is no longer coloured by the filtered fluid. If now a sample of the dried powder becomes of a beautiful blue colour on being burnt with sulphur, the last operation may be proceeded with. If otherwise, however, the ignition with sulphur and soda must be repeated, the first heat employed very likely not having been strong enough. The last operation consists in spreading over a cast-iron plate a layer of powdered pure sulphur, about one line thick, over this as much, or a little more, of the well-dried preparation, after having passed it through a gauze sieve, and then heating the plate till the sulphur ignites. Care, however, must be taken, that the sulphur is entirely consumed at the lowest possible temperature, so that the powder should not become too incandescent. If the operation be conducted on a larger scale, it might succeed best by alternately opening and closing the door of the furnace. This operation is repeated until the powder, which must be repulverized after each burning, has assumed the most beautiful colour possible, which is to be determined by trials made with small samples. During the burning, the powder increases somewhat in volume, and assumes a loose, somewhat downy consistence. The quantity of ultramarine obtained from the above quantity of ingredients, amounts to about 160 parts.—*Pharmaceutisches Central Blatt.*

ON THE ADVANTAGE RESULTING FROM THE PRESENCE OF BICARBONATE OF LIME IN WATER USED FOR ALIMENTARY PURPOSES,

And the Objections to the Presence of other Salts of Lime.

BY M. DUPASQUIER.

I HAVE read with much interest, a note on ossification in the pig, communicated by M. Boussingault to the Academy of Sciences, and the result of his investigations confirms, in a striking manner, the opinions I had for some time formed with reference to waters used for alimentary purposes, in opposition to the previously expressed views of some scientific men, "that those waters should be preferred which contain the smallest quantity of mineral substance in solution."

It appears from the experiments made by M. Boussingault on young pigs, that the calcareous salts contained in the water which they used, furnished a large portion of the lime required for the formation of the bones, &c., and which was not contained in sufficient quantity in other portions of their food. From this M. Boussingault arrived at the conclusion, that the calcareous salts contained in most of the potable waters, ought to be considered as very useful, if not absolutely necessary; and furthermore, that those waters which are least charged with calcareous matter, are far from being the most conducive to health.

Without detracting from the merit of M. Boussingault's experiments, the value of which I am fully sensible of, I may be permitted to remark that for more than eight years I have not ceased to condemn the erroneous opinions generally entertained in reference to potable waters.

The following is an extract from one of my works, published during that period:

"Those waters which are the purest in reference to the quantity of matter contained in solution, are not on that account the best. Absolutely pure water—distilled water which contains no salts—is not agreeable to drink; its taste is insipid; and experience proves that it is heavy on the stomach, and tends to indigestion. It is, therefore, a wise provision of Nature, that waters contain a greater or less quantity of foreign substances in solution. Their quality as potable waters does not therefore depend on their purity."

I have further stated, that all substances generally found in waters, do not contribute to render them potable; some few even render their properties hurtful. I have therefore divided the substances which are found in waters, into those the presence of which is useful and even necessary, and those which cannot exist in any considerable quantity without injuring the quality of the water for alimentary purposes.

In the list of *useful substances*, I have placed, first, *atmospheric oxygen;* second, *carbonic acid*, to which too little attention had previously been paid, in regard to its presence in potable waters; third, *chloride of sodium*, the value of which for promoting digestion is daily experienced; fourth, and lastly, *bicarbonate of lime*, which I was the first to show ought to be ranked among the most useful of these substances.

In the list of *injurious substances*, I place, first, *organic matter*, especially in a state of putrefaction; second, *sulphate of lime;* third, *other calcareous salts* (excepting the bicarbonate of lime), such as, chloride of calcium, nitrate of lime, &c., when in excess.

Here my opinion seems to differ from the tendency of M. Boussingault's experiments, which indicate in a general manner the utility of lime, whatever may be its state of combination. But this difference is but apparent.

M. Boussingault having occupied himself exclusively in investigating the influence of mineral substances in the process of ossification, has necessarily admitted that the calcareous salts, considered collectively, may all furnish the base of the earthy matter of bones.

I, on the other hand, who was studying the question of potable waters in all its bearings, took into consideration, that although sulphate of lime, chloride of calcium, and nitrate of lime, may all contribute to the process of ossification, yet they ought not the less to be considered as injurious, because all soluble calcareous salts (excepting the bicarbonate) render the waters unwholesome—that is to say, they communicate to them that objectionable property of being heavy to the stomach, of decomposing soap, and of hardening vegetables during the process of cooking, by which their digestion is rendered more difficult.

Bicarbonate of lime, on the contrary, is eminently useful, for while contributing to the organization the calcareous matter which is indispensable, it does not render the waters prejudicial to health. I have demonstrated, that the waters which contain even a large proportion of bicarbonate of lime (excepting the mineral waters of St. Allyre, St. Nectaire, &c.), become only opalescent when a solution of soap is added, and that there is no precipitate of insoluble calcareous soap. Therefore, the bicarbonate of lime ought not to be confounded, in this respect, with the other calcareous salts, for in the proportions in which it is generally contained in potable waters, it does not decompose soap, or interfere with the cooking of vegetables; but, on the other hand, it promotes the process of digestion, acting as a stimulant in the same way as bicarbonate of soda, and it contributes to furnish the calcareous matter required in the process of ossification.

Admitting, then, that sulphate of lime, chloride of calcium, and nitrate of lime, are capable of furnishing the earthy matter required in the organism of the body, yet it is, according to my view, the bicarbonate of lime that principally contributes to this object. A consideration of the importance and utility of bicarbonate of lime in potable waters, has induced me to seek a method of recognising its presence independent of that of other salts of lime. The test generally employed, oxalate of ammonia, precipitates lime from all its combinations, and consequently leaves it undecided which salt predominates in the water examined. The means of distinction which I sought, I have found in the use of an *alcoholic tincture of logwood*, which is capable of detecting the smallest traces of bicarbonate of lime in water.

This tincture should be made, either with or without heat, from logwood which has been recently cut, and which presents a yellowish colour. When the wood is of a deep red colour, it has undergone a change from the action of the air or of water, and is no longer fit for making the test. The spirit should be charged with the colouring matter of the wood, so as to present a deep brown colour.

In using this test, three or four drops of it are to be added to a glass of water; if the water contains the least trace of bicarbonate of lime, it will assume a fine violet colour. The larger the proportion of bicarbonate present, the deeper will the colour be. In distilled water, either pure, or with the addition of a solution of any salt of lime excepting the bicarbonate, the test will communicate only a feeble yellow colour. The same effect takes place if the test be added to water that has contained bicarbonate of lime, but from which this salt has been precipitated by boiling. The same effect is also produced on saturating the bicarbonate of lime with a few drops of any acid. In fact, the bicarbonate is the only salt of lime which acts on the colouring matter of logwood, in the same manner as the alkalies.

It may perhaps be objected against the employment of this test, that the carbonates of soda and potash would give the same reaction as the carbonate of lime; but it is well known that those salts do not exist in potable waters; and further, if a case should occur in which there may be any doubt on this point, it may be set at rest by first boiling a portion of the water so as to precipitate the carbonate of lime, after which the test will give a yellow colour, if it contained only the carbonate of lime; but on the contrary, it would give a violet colour if any alkaline carbonate were present.—*Journal de Pharmacie.*

A MEDICAL ERRAND BOY.

TO THE EDITOR OF THE "PHARMACEUTICAL JOURNAL."

SIR,—I have enclosed to you an interesting note, addressed to a medical gentleman in the City on the 6th inst., in reply to an Advertisement in the *Times*, for a footboy to wait at table, clean boots, &c.

I think you will agree with me that it affords a very apt illustration of the opinions you have frequently expressed, when commenting upon the evils arising from the assumption of the title "Chemist and Druggist" by uneducated and unqualified persons. It also affords a clue to the cause of those evils, which are as complicated in themselves as the ramifications of that cause are numerous.

The medical profession are known almost generally to express an objection to the business of a Chemist and Druggist, being considered a legitimate branch of their own profession. This objection, doubtless, originated in the feeling that their dignity would be compromised by being thus intimately connected with a profession, some of whose members are addicted to the dishonourable practices so often deprecated by the *Pharmaceutical Journal*, and for which the conduct of our body generally becomes impugned. Does it, however, never occur to the members of that profession that much of the evil they complain of emanates from among themselves? I should be unjust were I to insinuate that this occurs intentionally on their part, or with the consciousness that they are inflicting injury on our body; but I conceive that the letter I have enclosed may serve well to justify my impression that, through want of consideration in the employment of uneducated persons, they aggravate the evil they complain of. Thus, a boy at the age of twelve years, with sufficient education to enable him to read and write, is employed by a medical man to perform the menial offices of his household—to run errands, clean boots, wash mortars, &c. Showing, perhaps, a little unusual intelligence, he is suffered to beat up pill masses, and after a while is able to read the abbreviated Latin inscriptions on the jars and bottles. Without detailing his progressive steps we at length find him entrusted with the dispensing of medicines—a limited knowledge of which he acquires by habit. Thought and study are as much eschewed now as were Murray and Entick in his school-days. He is, however, an embryo "dispensing Assistant" (!) Feeling that he must necessarily move on, he desires a change for "improvement" (of course). He induces a "Chemist and Druggist" (of his own primitive origin it may be inferred) to employ him, by offering as a bribe gratuitous services—even to menial occupations. Another step: he dons "respectable clothes," and becomes a salaried Assistant, arrogating the privileges which an Assistant, whose education has been expensive, and application and study great, cannot always secure. This, then, is an instance of the kind of qualification on which many who degrade our body found their claim to be entitled Chemists and Druggists; and thus do individuals of the medical profession become instrumental in giving rise to empiricism, and justice to the really qualified subverted.

Pharmaceutical Associates have latterly been accused of apathy; and, I am sorry to say, that the accusation is, in some degree, merited. But is it not a plausible excuse with many, that however much they strive for qualification, they cannot compete with the less qualified with honour or satisfaction to themselves, because the salaries are, in many instances, so small, as to be no encouragement, and only acceptable as a remuneration to those whose qualifications have been loosely acquired. Intelligence and education are too frequently sacrificed to an ill-judged economy, and so long as the principal superintends, the capabilities of an automaton are considered sufficient.

To the members of the Pharmaceutical Society the Assistant Druggists look for the first important step towards raising the scientific standard of our body. Let them decline employing others than those who shall *at least* have served a proper apprenticeship to the business: let them show their decided approval, and acknowledge the advantages to themselves, of increased qualification in the part of their Assistants; their Assistants' interests and inclinations must then become identified with the interests of their employers, and stimulate them to vie in scientific acquirements with corresponding associations in continental countries.

I am, Sir, your obedient servant,

London, August 1846. W. O. C.

"Sir,—If you have not engaged with a youth, I shall be happy to come. My age is eighteen; I am living with a Surgeon in the country—waits at table, and makes up the medicine in the Surgery for the Assistant. Mr. ——— likes me very much, and I am sure he will give me six years' good character. If you will write, Sir, stating wages enough to find me in respectable clothes, will suit me, with a chance of my improvement, so as to take a dispensing Assistant's place in the course of two or three years. I must give a week's notice. My direction is

"H. M., C—— Street, F——, Surrey."

PRESCRIPTIONS FOR THE MILLION.

As regular physicians are in the habit of adapting their remedies to the particular cases of their patients, they are under the necessity of writing a prescription for each. Persons who "cure" all disorders by means of one nostrum, enjoy an advantage in this respect, being spared much trouble by keeping printed forms of prescription, blanks being left for any casual instructions. The following is the form adopted by Professor Holloway, in which, besides prescribing for each particular case, he introduces general orders to take plenty of pills, which, being the most important instruction, is mentioned in the Postscript. The words in italics, between brackets, are inserted in manuscript, being the special directions for the case of Mr. O'R——, in which the number of pills prescribed is 1560, or 130 dozen!!

244, *Strand, London, Feb.* —, 1846.

(*MR. O'R*——)

SIR,—I BEG to acknowledge the receipt of your letter of the 6th instant, requesting my Advice in a case which you there submitted to me; upon duly considering the same, I would recommend (*eight*) of my pills to be taken night and morning for the first (*fifteen*) days, (*ten*) night and morning for the following (*thirty*) days, and (*twelve*) night and morning might be taken after that time, for about (*thirty*) days longer, or until such time as a perfect cure might be effected.

USE THE OINTMENT precisely as directed in page of my Ointment Book, wherein are carefully treated. One of the Books referred to, is affixed to every pot of my ointment.

It is necessary to observe, that unless the *strictest* attention be paid to the directions that follow, respecting the DIETARY SYSTEM, my Medicine will be of *no kind of service* in the case here referred to. No (*ale, beer, wine, spirits, or coffee*) must be made use of while undergoing a course of my Medicine, neither must you eat of any (*salt provisions, fish, broths, soups, stews, gravy, or slops of any kind, no vegetables whatever, no puddings, pies, or pastry, no eggs, milk, butter, pork, or rashers of bacon. Take neither milk or sugar in your tea.*)

THE MOST SUITABLE DIET for the case will be (*fresh beef and mutton (not the fat part) roast or broiled, and stale bread, drinking water only with your dinner.*)

GENERAL DIRECTIONS.—(*You should rub plenty of my ointment into your chest night and morning, as effectually as forcing salt into meat. Take plenty of out-door exercise, and very strictly adhere to my rules of diet, and I have no doubt you will soon be much better, but it may require some perseverance to eradicate the disease out of your system. It is very unusual for me to answer any one in London, therefore cannot write you again*).

IF THE TREATMENT which I recommend be duly followed, there will (I think, under Providence) soon be a great change for the better, in the (*case*) advised on. But perseverance is absolutely necessary to establish a cure such as may be sound and permanent.

I remain, your most obedient servant,

THOMAS HOLLOWAY.

N.B. It is expected that parties who apply for advice, should enclose a postage stamp to pre-pay the reply to them.

Whenever my Advice may be required more than *once*, it will be absolutely necessary that my former letter should be sent to me, together with a fresh statement, in order that I may know what treatment I had previously deemed necessary.

⁂ It may appear to some that the doses of my pills are too large; to such I beg to say, that they contain no mineral, as mercury, or other injurious ingredients; and it is necessary that certain balsamic and purifying properties, of which they are composed, should be instilled into the system in such quantities as the blood requires, or little or no benefit can be derived from their use. They can harm none, but do good to all who take them. The larger the dose that can be taken with convenience, the sooner the patient will be cured.

IMPOSITIONS ON CHEMISTS.

TO THE EDITOR OF THE "PHARMACEUTICAL JOURNAL."

Dear Sir,—Having observed a letter in this month's journal, signed "A Scotch Country Practitioner," in which he states, that extract of gentian flavoured with the essential oil of chamomile was substituted for extract of chamomile, and that you appeared to doubt the fact, by challenging him to publish his name, and the name of the parties to whom he alluded: I take the liberty of writing to add my testimony to that gentleman's (of whom I am ignorant) as I perfectly believe the fact, and have *good reason* for supposing that the practice is resorted to by more than one wholesale house in town, and when I remonstrated with the party who recommended such a substitution, he defended the practice by saying, that the virtues of the chamomile resided in the essential oil, and therefore it was as good or better than the genuine. I am not going to stop to inquire whether or not this is true, for I think that when Ext. Anthemidis is ordered, that, and no other should be used. Allow me to suggest, that perhaps Mr. Redwood may find out a test that will detect the presence of such admixtures; I am aware that the subject is attended with great difficulty, but at the same time not unworthy of attention. I sign my real name to prove that my communication is genuine, but I will thank you not to publish it.

While I am on this subject, I would just beg to draw the attention of Chemists generally to a practice, which, to say the least of it, is very annoying. A man respectably dressed called upon a party I know, for a bottle of "Clarke's Succedaneum;" not having the article, he tried to get it, and the customer was to call again; but upon sending to a patent medicine warehouse in Oxford Street, they stated that the article had been asked for by two or three parties for customers, in each case, I believe the individual never called again, and the Succedaneum became at once "dead stock," as there is no demand for it, so he very wisely declined having any. The hint may perhaps be useful. I should have said the man alluded to did not call a second time.

I remain, dear Sir, yours respectfully,

W.H.B.

London, November 3rd, 1846.

[We regret the above confirmation of a statement which we had considered a calumny. The circumstance, in some degree, accounts for another fact which we have recently heard on good authority, namely, that two or three wholesale houses are industriously running down the Pharmaceutical Society, because they find that any improvement in the education of Retail Chemists is inconvenient. They say the ignorance of their customers is their chief source of profit; but when so much fuss is made about quality it is impossible to get a living. We advise our retail brethren to watch this *symptom*, and when they hear a traveller launch out against the society, let them beware of his extractum anthemidis. Those whose deeds will bear the light are favourable to education, as it enables their customers to appreciate the quality of the preparations which they offer to them.—Ed.]

PROSECUTION BY THE EXCISE.

The Attorney-General *v.* Bailey.—This was an information filed by the Attorney-General against the defendant, an extensive manufacturer of sweet spirits of nitre, carrying on business at Globe-road, Whitechapel, for the recovery of penalties for various breaches of the excise laws. It was tried before the Lord Chief Baron during the Middlesex sittings after the last Trinity Term, when the jury found a verdict for the Crown for penalties, amounting to £6,500. Upon the first count of the information they found that the defendant was liable for £2,000, for having in his possession, and using private or unentered stills; upon the fourth count £500, for distilling spirits without a licence; and upon the fifth count £4,000, for removing stock without permits. At the trial it was contended, on behalf of the defendant, that he had not incurred the penalties sought to be recovered by the crown on the first and fourth counts, as the still and machinery found in his possession had been established for the distillation of sweet spirits of nitre, and other spirits used in the manufacture of low wines, for chemical purposes, for which no licence was necessary. The learned judge, however intimated that there was no doubt of the defendant's liability, and directed the jury to find a verdict for the crown, if they believed the evidence.

In the Court of Exchequer, on Tuesday, a new trial was asked on the part of the defendant, on the ground of misdirection as to his liability on the first and fourth counts; and, as to the fifth count, to reduce the damages, as the number of breaches were not clearly proved.

The Court thought there ought to be no rule upon either ground. Every man having a still in his possession was liable for penalties if not duly licensed to have it; and no doubt could exist that, in a case like the present, where spirits were manufactured and afterwards sold, such a manufacturer of spirits is a distiller, who should be duly licensed. The legislature must have means to prevent the sale of spirits without a licence, and, the defendant being thus liable, the direction of the learned judge was right. As to the reduction of damages, it appeared, on looking over the evidence, that there was sufficient proof to support the twenty penalties claimed by the crown, and, therefore, there should be no rule on that subject either.

The rule was accordingly refused.—*Hull Packet, Nov.* 20.

REVIEWS.

Elements of Chemistry, *including the Applications of the Science in the Arts.* By **Thomas Graham,** F.R.S., L. and E., Professor of Chemistry in University College, London; President of the Chemical Society, &c., &c. Second Edition, entirely revised and greatly enlarged, with additional wood engravings. Part I. H. Baillière, Regent Street. Paris: J. B. Baillière. Leipsic: T. O. Weigal.

We have so frequently had occasion to make favourable allusion to the former edition of the work before us, that a lengthened notice of this, the first part of the second edition, is unnecessary. The author holds the highest rank among the Chemists of this country; his philosophical investigations have largely contributed to the establishment of some of the leading principles which characterize the modern science of Chemistry, and his sound and clear exposition of these principles, in his *Elements of Chemistry,* has gained for that work a deservedly high reputation on the continents of Europe and America, as well as in this country. The second edition contains much new matter, which was necessary to bring it up to the present state of chemical knowledge. The part under notice, treats of heat, including the general properties of gases, light, chemical nomenclature and notation, the laws of chemical combination, atomic theory, and isomorphism. The chapter on the properties of gases, contains the results of the author's recent investigations on the effusion and transpiration of gases; there is also an extended and valuable table of the specific gravities of gases and vapours.

The publication of the work, in parts of unequal size, is expected to be completed in about six months. We intend to notice the parts as they appear.

A Manual of Materia Medica and Therapeutics; *including the Preparations of the Pharmacopœias of London, Edinburgh, and Dublin, with many new Medicines.* By J. Forbes Royle, M.D., F.R.S., Professor of Materia Medica and Therapeutics, King's College, London, &c. &c. London: John Churchill, Princes Street, Soho. Small 8vo, pp. 716.

The form of this work resembles that of *The Manual of Chemistry* by Professor Fownes, being one of the same series. It is a kind of work which has hitherto been much in request, as it contains, in a condensed form, the pith of a very important and comprehensive subject, and is offered to the student at a price which is much below its intrinsic value, when the amount of matter and the style in which the work is got up are taken into consideration. The author says he undertook its publication, being

> "Convinced from his experience as a teacher, that the student of Materia Medica required something systematic to study, which, brought up to the present time, should be sufficiently full for information, and yet as short and condensed as was compatible with the avoidance of being superficial."

We think he has in this respect well accomplished the object designed.

The first part of the book, consisting of twenty pages, is devoted to an explanation of the subject, a description of some Pharmaceutical operations, and a brief exposition of the nature of the changes which occur in the processes subsequently described, tending to show that Pharmacy is a branch of the science of Chemistry.

The articles of the Materia Medica are divided into those derived from the mineral, the vegetable, and the animal kingdoms. These are treated of separately in the above order.

The Mineral Materia Medica is arranged in the manner adopted in most chemical works. It contains a concise yet sufficiently explicit description of what are commonly called the chemical processes of the three British Pharmacopœias, including many remedies, such as the citrates of iron, which are extensively used, but have not yet been recognised by the Colleges from which the Pharmacopœias emanate.

In the Vegetable Materia Medica, a botanical arrangement is adopted, the plants yielding the several articles being classed under their natural orders, according to the arrangement of De Candolle. This part of the work is embellished with some very beautifully executed wood-cuts by Bagg, which add much to its value, especially as they are mostly in illustration of plants, or taken from sources, not commonly within the reach of the student. There are about one hundred cuts of this description.

The Animal Materia Medica is classified according to Professor Grant's arrangement.

The author had previously gained a high reputation as an accomplished botanist, by the publication of his *Illustrations of Himalayan Botany;* he has also had much experience in reference to the Materia Medica of India, having been engaged by the Medical Board of Bengal, while residing there, in investigations connected with the medicines indigenous to that country. On most subjects of this class therefore his statements will be received with much deference and authority. He has also contributed to the advancement of pharmacological knowledge through the pages of this journal (see vol. v., pp. 495 and 541), and much original matter of an equally important nature will be found in the volume under notice, in the articles on Senna, Rhubarb, Asafœtida, &c. But in addition to these subjects, with reference to which the author has had opportunities for obtaining much correct and original information, there are evidences throughout the work that the author has well selected his facts, from the most authentic sources.

A HISTORY OF INVENTIONS, DISCOVERIES, AND ORIGINS. By JOHN BECKMANN, *Professor of Economy in the University of Göttingen.* Translated from the German by WILLIAM JOHNSTON. Fourth Edition, carefully revised and enlarged by WILLIAM FRANCIS, Ph.D., F.L.S., &c., and J. W. GRIFFITH, M.D., F.L.S. London, 1846.

IN our number for August we briefly adverted to this work, reserving our notice of it until the receipt of the second volume, which has now reached us. The book, as its editors inform us, may be classed as a compound of learned research and light reading, suitable both to the popular reader and the scholar. In order to enhance its value such additions have been made to the original, as seemed necessary to bring the accounts of the subjects there treated to the present state of knowledge.

In the first volume some curious particulars are given respecting alum. Many of our readers are, perhaps, not aware that this salt, so extensively used in the arts, was at one time a monopoly of the papal see, and its price was raised to such a pitch by the apostolical chamber, that traders found an advantage in sending for it to Turkey. "His Holiness, that he might convert this freedom of trade into a sin, and prevent it by the terror of excommunication, artfully gave out that he meant to set apart the income arising from his alum-works to the defence of Christianity; that is, towards carrying on war against the Turks. Prohibitions and threats now followed in case any one should be so unchristian as to purchase alum from the infidels; but every person was at liberty to make what bargain he could with his Holiness for this commodity." p. 195. In 1504 indeed, Roman alum had risen to such an exorbitant price, that in consequence of a council of inquiry, instituted by Philip the Fair, Archduke of Austria, commissions were sent to Turkey; but scarcely was this known when the thunders of the Vatican were issued against him by Pope Julius II. This pontiff, however, was not the only one from whom such prohibitions emanated; bulls of the like kind were issued also by Julius III., Paul III., Paul IV., Gregory XIII., and others.

Among other articles possessing historical or scientific interest, we may refer to those on magnetic cures, secret poisoning, gold varnish, sealing wax, sympathetic ink, cochineal, verdigris, aurum fulminans, cobalt, &c.

Pages 326-340 are occupied with some very quaint research touching Apothecaries, a term corresponding to that of our Chemist and Druggist. It would appear, according to our author, that they obtained their first legal establishment by the well-known medical edict of the emperor Frederick II., issued for the kingdom of Naples.

> "By that edict it was required that the *confectionarii* should take an oath to keep by them fresh and sufficient drugs, and to make up medicines exactly according to the prescriptions of the physicians, and a price was fixed at which the *stationarii* might vend medicines so prepared, and keep them a year or two for sale in a public shop or store. The physicians at Salerno had the inspection of the *stationes*, which were not to be established in every place, but in certain towns. The *confectionarii* appear to have been those who made up the medicines or *confectiones*. The *statio* was the house where they were sold, or, according to the present mode of expression, the apothecary's shop; and the *stationarii* seem to have been the proprietors, or those who had the care of selling the medicines. The word *apotheca* seldom occurs in that edict; when it does, it signifies the warehouse or repository where the drugs were preserved. I however find no proof in it that the physicians at that time sent their prescriptions to the *stationes* to be made up. It appears rather that the *confectionarii* prepared medicines from a general set of prescriptions legally authorised, and that the physicians selected from these medicines, kept ready for use, such as they thought most proper to be administered to their patients. A physician who had passed an examination, and obtained a licence to practise, was obliged to swear that he would observe *formam curiæ hactenus observatam*; and if he found *quod aliquis confectionarius minus bene conficiat*, he was obliged to give information to the *curia*. The *confectionarii* swore that they would make up *confectiones, secundum prædictam formam*. It was necessary that electuaries, syrups, and other medicines, should be accompanied with a certificate from a physician to show that they were properly prepared."

The second volume contains a learned article on soap, and also disquisitions on zinc, manganese, indigo, hops, sal ammoniac, saltpetre, artificial ice, tin, and steel; besides curious information on a variety of other subjects likely to instruct and interest our readers.

THE POTATO PLANT, *its Uses and Properties, together with the Cause of the Present Malady; the Extension of that Disease to other Plants, the question of Famine arising therefrom, and the best means of averting that Calamity.* By ALFRED SMEE, F.R.S., &c., &c. London, 1846. 8vo, pp. 174.

We received this work just as we were going to press, and have only time to glance briefly at its contents.

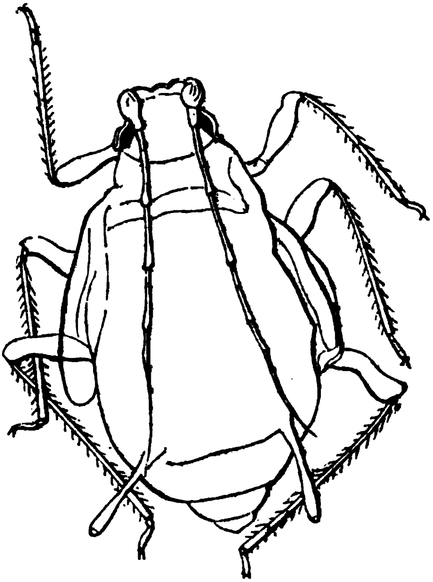
Mr. Smee believes that he has discovered the cause of the potato-disease, in the injury inflicted on the leaves of the plant by an hemipterous insect, a species of plant-louse, called *Aphis vastator*. We shall, however, let the author speak for himself:

"The [potato] plant is subject to death at various parts, or a sort of vegetable gangrene.

"This death, in the form presented by the present disease, is influenced, but not caused, by heat, light, electricity, moisture, soils, and manures.

"It is, however, caused by the *Aphis vastator*, which punctures the leaf, sucks the sap, and destroys the relation between the leaf and the root, thus causing the leaf or some other part of the plant to become gangrenous, or in other words, to die.

"After the attack of the vastator, fungi grow, which growth is probably in many cases materially assisted by the prior attack of the aphis."



Aphis vastator in the pupa state, with the antennæ reflexed over the back, a position which the insect always takes when feeding.

Assuming that the aphis is the cause of the disease, Mr. S. examines at great length the remedies best adapted for it, and he recommends sifting fine lime over potato plants as soon as the vastator appears.

A solution of polysulphuret of calcium, obtained by boiling lime and flowers of sulphur in water, is very destructive to aphides, and is not unfrequently employed by gardeners for this purpose. The author however, omits to mention this remedy.

Whether Mr. Smee's opinions be correct or not, time alone will determine. In either case, his book will be valuable, on account of the great variety of matters connected with the potato, which it contains. He discusses the plant botanically, chemically, and politically, and illustrates his book by ten plates, containing a fac-simile of Gerarde's wood engraving of the potato, the structure and growth of the plant, the fungi on diseased potatoes, as seen by Martius, Berkeley, and himself, and figures of the *Aphis vastator*, as well as of the insects which destroy it.

THE MICROSCOPIC ANATOMY OF THE HUMAN BODY *in Health and Disease, illustrated with numerous Drawings in Colour*. By ARTHUR HILL HASSALL, F.L.S., M.R.C.S., &c. &c. Parts 1, 2, 3, and 4. Samuel Highley, 32, Fleet Street.

The microscope is an endless source of entertainment and instruction; it is like an additional sense, which developes a new world to the view. This instrument affords to the Chemist a valuable aid in the exercise of his art, and its applications to physiology are of still greater importance. The above work contains much matter highly interesting to the Chemist, although it is more especially designed for those who are engaged in studying the anatomy of the human body.

CHEMISTRY AND PHYSICS IN RELATION TO PHYSIOLOGY AND PATHOLOGY By BARON JUSTUS LIEBIG, M.D., F.R.S., &c. &c. London: Baillière, 1846.

THE great German master of organic chemistry has in the present small treatise undertaken a very great task, that of investigating the rules of right reasoning, in applying the laws of corpuscular and elective attraction to explain the phenomena of life in the healthy and morbid states of its organs. Our author probably regards himself in this work as doing for the medical profession what Bacon achieved for the philosophical world at large; endowing it, for the first time, with a *novum organum* of research.

He begins in a manner sufficiently simple, with a chaplet of truisms, strung together in short paragraphs, separated by capital titles of which the following may serve as examples:

1. Development of the natural sciences, where we are told that physics consisted at first of unconnected observations and experiments; but he should have added that these were most frequently so incorrectly made, as not to constitute facts as a solid basis of philosophy. 2. In his second section we are informed that when two or more facts were made to bear on each other, *special* and *general* laws were deduced. Before adverting to the next paragraph, where he confounds the syllogistic with the inductive plan of reasoning, we shall insert here four rules worthy of his attention.

1. That the principles on which a philosopher sets out in his exposition of principles, should be clearly stated. 2. That they be fully warranted as deduced from real facts. 3. That no extraneous idea flowing from the ambiguity of language be admitted so as to mislead the judgment. 4. That all the links in the chain of reasoning be distinctly connected with each other, and the final one or conclusion, with the whole, so that the truth may be clearly established.

"Many branches of physics, as mechanics, hydrostatics, optics, acoustics, the theory of heat, &c., have been elevated to the rank of abstract sciences, in consequence of their permitting all known cases of the phenomena of motion, air, sound, heat, &c., to be traced through a series of syllogisms to certain truths, or to a very small number of undoubted facts." Page 2.

Now, every logician, from Bacon downwards, has taught that syllogism, however useful it may be in detecting false reasoning, does not lead to the discovery of any new truth. The general law, which comprehends and classifies the individual scattered facts of science is always derived from them by an inductive process, and not by a syllogistic formula. "*Syllogismus ex propositionibus constat, propositiones ex verbis, verbæ notionum tesseræ sunt. Itaque si notiones ipsæ confusæ sint, et temere a nebus abstractæ; nihil in iis quæ superstruuntur est firmitudinis. Itaque spes est una in inductione, vera.*" "A syllogism," says Bacon, "consists of propositions, propositions of words, and words are the marks (signs) of notions. Therefore, if the notions themselves be confused, and rashly abstracted from things, there is no solidity in the superstructure. Hence, there is no hope but in a true induction."

If we cannot therefore regard the great Chemist of Giessen as a legislator in the domains of scientific logic, we readily give him credit for having advanced on the present occasion several ingenious views in physiology and pathology. The following is a list of the titles of his successive paragraphs.

"Course of investigation—Pre-conceived views an impediment to investigation—Physiology as a deductive science—Investigation pursued according to physiological laws—The difference between the chemistry of the present day and that of an earlier age—Point of view assumed by many physiologists at the present day—Confusion of effect and cause—False explanation of physical properties—Every phenomenon of nature is dependent on more than one cause—Chemical combination—Different effects of heat—The separation of vital effects and the requisites thereto—Continued disregard of these principles—Indefinite ideas of irritability and irritants—False analogies—Typical force an indefinite idea—Light considered as an irritant—Sound as an irritant—False idea of reaction—Verbal explanation no advance—Exercise of the imagination with reference to observation—Error originates in false observations and combinations—Observation—Examples of erroneous observations—The supposed influence of the moon upon the formation of dew—The influence of the atmosphere upon evaporation

—Dilution of the oxygen of the atmosphere by nitrogen—The power of the sun in attracting water—The idea of Boerhaave on the origin of the alkalies in plants—False comparison between the cohesive force of crystallization, and the organic forcc—Comparison of the parasite theory with the chemical theory of contagion and putrefaction—Influence of mechanical motion on crystallization and crystallizing solutions of salts—Influence of it on sulphuret of mercury, iodide of mercury, and iron, and on the indication by chemical affinity—Heat similar to the action of a mechanical force—Influence of the condition of chemical activity upon the capacity of bodies to enter into combinations, and to suffer decomposition, also upon organic substances—Decayed wood—Relation of urea and hippuric acid to urine—Influence of the putrefaction of wood on the oxidation of hydrogen—The fibrine of the blood and yeast act similarly towards binoxide of hydrogen—Relation of combined organic atoms amongst themselves—Putrefaction—Affinity not the cause of putrefaction—Decomposition of amygdalin and asparagin by putrefying substances—The conversion of starch into sugar—Also by animal membrane—Fermentation and its properties—Different degrees of putrefaction, and their influence upon fermentation—Milk of almonds and sugar—Caseine and sugar—Animal membrane and sugar—Influence of a higher temperature upon fermentation—Fusel oil from sugar—Separation of the sugar similar to that of acetic acid, occasioned by the action of heat—The property of causing fermentation is common to all compound organic atoms—Causes of the change of form and property of matter—Continuance of the decomposition—Antiseptic substances--Relation of arsensious acid to membranes--Extension of the processes of *putrefaction* and *fermentation* to the living animal body—What is to be understood by the term products of disease—Antiseptic substances retard the extension of contagion and miasma—Putrefactive processes as causes of contagious diseases—A challenge to investigation—The parasite theory—The itch is a contagious disease propagated by an animal—Contagious diseases not communicated by animalcules—Parasites in the bodies of the higher classes of animals—Muscardine—Parasites in animals and plants—False views of the causes of putrefaction are the foundation of the parasite theory—Fungi and infusoria do not occasion putrefaction—Opposition between putrefaction and the process of life—Fungi and infusoria are subjected to putrefaction, fermentation, and destruction, and they are the attendants, but not the originators, of the process of putrefaction, but they hasten the process of putrefaction and corruption, by which means they become the enemies of the process of putrefaction—The nature of yeast—Relations of the yeast in solutions of sugar, in grape juice, and in beer wort—The formation of yeast, alcohol, and carbonic acid are mutually dependent upon each other—Vibriones in the urine—Fungi contain sugar—Change in the process of putrefaction in heated air—A storm and the barometer—Symptoms of fever—Must not be regarded as the causes from whence it arises—Henle's explanation of fever—What course must be pursued in the investigation of the cause of fever—Connexion of the spinal cord with the effects of motions, regular and irregular—Animal life in regard to motion—Relation of heat to the oxygen of the air—Erroneous conclusions drawn from bringing one cause too prominently forward—Correction of Schleiden's view—The means of motion are by communication, by attraction and repulsion, by chemical processes, by putrefaction and fermentation—Point of contact between physiology and chemistry—Deviation of chemical and mechanical laws from the vital—Relation of the properties of elements to those of their combinations—The chemical forces of the elements have a share in the vital properties—The relation of the weights of the elements to chemical combination—Universality of the laws of mutual dependence in natural phenomena—How to know the relation—

Examples of the laws of dependence in pressure and boiling point, and they are distinct from the causes by which these phenomena are effected—The boiling point, the specific gravity, and the composition of a body stand in relations of dependence to each other—Specific heat and atomic weight—Specific heat and tone of gases—Electricity and magnetism—Magnetism and heat—Magnetism and chemical force—Vital forces are no exception to a law of nature—Anatomy most essential, but not alone sufficient, nor Chemisty—Relations of dependence cannot be established by a numerical system—Chemical relations between urea, uric acid, allantoin, and oxalic acid—Chemical formulæ ?—Their importance—Reasons to study decompositions—Misuse of formulæ—Hopes.

Such is the *ad captandum* list of speculations here offered by the learned Baron to excite the curiosity of the British public; in which nothing is at first sight more startling than their strange medley and the juxta-position of their enigmatic titles.

An Easy Introduction to Chemistry. By George Sparkes, *late Madras Civil Service*. Second Edition. London: Whittaker and Co., Ave Maria Lane, small 8vo, pp. 184.

This is a popular treatise on the application of Chemistry to the explanation of many of the phenomena of nature; it is calculated to awaken inquiries in the minds of young persons, as to the *rationale* of the changes which are constantly occurring in the material world; and, by a series of simple and inexpensive experiments, to trace many of these to the laws by which they are governed. It differs from some other works, having a similar object, in the subject being treated analytically rather than synthetically,—that is to say, instead of commencing by describing the fundamental principles of Chemistry, and then applying these to the explanation of phenomena, the phenomena are first stated, and the explanations sought by experiment.

We think it a useful little book, for the purpose for which it is intended.

The Chemist's Counter Companion; *or complete retail Price Book. Compiled for the Leicestershire Association of Chemists and Druggists*. By John Goddard. Second Edition, revised and enlarged. London: Messrs. Barclay and Sons, 95, Farringdon Street.

The present edition of this useful little book is much enlarged and improved. We defer our notice of it until next month.

Quarantine and the Plague. A Pamphlet. Pp. 69. By Gavin Milroy, M.D., &c. Samuel Highley, 22, Fleet Street, London; Sutherland and Knox, Edinburgh; Hodges and Smith, Dublin; Baillière, Paris.

Medical Education: *Two Lectures*. By William Augustus Guy, M.B., Cantab. *Delivered at King's College, London, Session* 1846-7, *and in* 1842. Pp. 64. H. Renshaw, 356, Strand.

Instructions for Making Unfermented Bread. By A Physician Third Edition. London: Taylor and Walton.

TO CORRESPONDENTS.

Dr. Collier's Quinine Wine.—Dr. Collier informs us that he now recommends eighteen grains of quinine to a bottle of orange wine, instead of fifteen, adding in a note: "for very delicate stomachs half the proportion of quinine will suffice."

Dr. Wansbrough sends us the following formula for a **Purgative Powder**, either for children or adults, resembling Basilic powder: observing that the jalap is a good addition, and that he prefers antimonial powder to the "washed calx of antimony."

℞ Pulv. Jalapæ
—— Scammon.
—— Antimonialis
—— Potassæ Supertart.
—— Hydrarg. Chloridi. Partes æquales. Misce.

We are obliged by the communication, although the subject is rather a medical one.

Decoctum Aloes Compositum.—Mr. E. H. De Philipe, in reference to some remarks by Mr. Westall in our last number, observes that the liberty allowed by the College to vary the processes provided the results be correct, applies only to Chemicals, and not to Decoctions, &c. [The term used by Mr. Phillips is "medicines," and we think it applies to any preparation in which the desired result may be obtained by an improved method].—A. P. S. (Cheltenham) observes, that by adhering strictly to the Pharmacopœia, he finds that the preparation will keep for eighteen months or more, and considers that it ought not to be as clear as a tincture, as the compound tincture of cardamoms is ordered to be added *after* the decoction is strained, which occasions some little deposit.—Mr. J. F. Leach on the contrary observes, "In Phillips's translation it is said 'Decoctions ought always to be strained hot, because certain principles which are dissolved by hot water are deposited on cooling;' but I do not think this remark applies to the compound decoction of aloes, as, on examination, the sediment will be found to consist of mucilaginous matter, with the impurities always found in the aloes and liquorice. After the addition of the tincture, the decoction should be set aside for some days, during which time a bulky precipitate of inert vegetable matter is thrown down—this should be separated by a filter, and the liquid is then ready for use. By this process, which does not essentially differ from the Pharmacopœia, a beautifully bright and clear decoction is obtained, which is not at all prone to change." [The above correspondents having condemned Mr. Westall's process, we have again considered it, and are not prepared to join in the censure; nor could we give a decided opinion on the subject without some investigation of the result, both in the fresh state and after having been kept for some time. The suggestion was inserted on the authority of the author, who states his experience.]

R. K.—The sample of gum appears to be genuine, although not of the best quality.

"**Coventry.**"—For some account of beberine, see vol. v., p. 228. The sulphate of beberine is prepared by Messrs. Howard and Co., of Stratford, and we believe also by other chemical manufacturers.

V.H.—The subject is at this time under consideration.

Z.—Naples soap is a potash soap made with olive oil. We are not aware what are the peculiarities of the process.

"A LEARNER."—Phosphorus liquefies at a temperature of 108°. The water must therefore be at that temperature.

A. L. B.—Lotions and injections containing precipitates should not be filtered without instructions to that effect in the prescription.

M. P. S.—The mixture of lytharge, &c., is not likely to produce the effect alluded to.

AN ASSOCIATE.—Extractum catharticum is an old name (1746) for ext. coloc. co. Dried lemon-peel is frequently substituted for fresh, half the quantity being used.

A. D. C. JAMES WILSON.—(1.) Tincture of cochineal may be made of any strength desired by macerating powdered cochineal in rectified spirit of wine.—(2.) A liquid called "bloom of roses" is made by dissolving carmine in solution of ammonia.—(3.) Acetate of lead.—(4.) The question is entirely medical.

A. B. C. should apply to the Secretary, Mr. Smith, 17, Bloomsbury Square.

A MEMBER.—(1.) The only Act bearing upon the subject is the Apothecaries' Act of 1815.—(2.) All the information required may be found in vol. v, page 532.

"AN OBSERVER" is "surprised that the PHARMACEUTICAL SOCIETY should be so reluctant to abridge the hours of labour," and seems to consider that this arises from a prejudice in favour of "midnight trading." [We hope the facts stated in our article on the subject in this number will convince our correspondent that he is mistaken in his inference.]

A MEMBER, who informs us that he has been above twenty years in business, is opposed to the shortening of the hours, unless some plan can be adopted for the improvement of young men in the evening, observing that "the palid countenance and lack lustre eyes," are more likely to be occasioned by idle and dissipated habits in the evening, than by any other cause. He recommends an hour or two to be given for exercise in the morning, and as much time as possible to be allowed for reading and study in the evening.
Several other correspondents have addressed us on the subject, in favour of shortening the hours of business.

A. P. S.—In order to answer the question confidently, it would be necessary to analyse the substance.

E. A.—We shall make inquiry on the subject, but believe our correspondent has been misinformed.

F. K. (Stratford)—(1.) The free nitrous, or nitric acid in sweet spirit of nitre, produces the same reaction on hydriodic acid that iodic acid does.—(2.) See page 264 of this number.

We have heard a rumour, that informations have been laid against some Chemists for selling lozenges, by the ounce, without a stamp. If any cases of this kind have occurred we shall be glad to be informed of the particulars.

Advertisements to Mr. CHURCHILL, Princes Street, Soho.

Instructions from Members and Associates, respecting the transmission of the Journal, to Mr. SMITH, 17, Bloomsbury Square, before the 20th of the month.

Other Communications to THE EDITOR, 338, Oxford Street, before the 20th of the month.

THE PHARMACEUTICAL JOURNAL.

VOL. VI.—No. VII.—JANUARY 1st, 1847.

SPECIAL AND GENERAL EDUCATION.

When describing the nature and limits of the Education which the Pharmaceutical Society has adopted as constituting the official qualification of the dispenser of medicines, we pointed out the importance of avoiding a departure from the strictly pharmaceutical character of this qualification. The experience of our predecessors, the Apothecaries of the last century, is sufficient to demonstrate the impolicy of extending our curriculum of education beyond the proper functions of the Pharmaceutical Chemist. It is not desirable either for the credit of the profession of Pharmacy, or the interests of its representatives, that they should become a body of Medical Practitioners. The wants of the public require a class of pharmaceutists, and in order to maintain such a class in its integrity, it is absolutely necessary that the official pharmaceutical qualification should be isolated and clearly defined. Any departure from this line of policy, besides being injurious to the interests of our body, would inevitably draw down upon us the unanimous opposition of the whole medical profession.

Our observations on this subject, in our last number, have been misunderstood by some of our readers, who appear to imagine, that in placing a limit on pharmaceutical education, we proposed to reduce the Chemist to the condition of a mere automaton and mechanical compounder of medicines, denying him the privilege of cultivating his mind or extending his experience in any other direction. These objections are raised chiefly in reference to the question of counter-practice, which was settled long ago.

After all that has been stated on the subject in this journal, we are surprised that such a misconception should exist in the minds of any of our readers. We have always contended, and frequently proved by an appeal to facts, that since it is the duty of the Chemist to be acquainted with the properties and doses of medicines, he is obliged to administer simple remedies occasionally, and to answer the inquiries of patients not in a medical capacity, but in cases where no medical advice is required. If this be an evil, it is a necessary one, and the public are responsible, since they insist upon receiving such information as the Chemist is able to give. So long as patients are allowed by law to take medicine without any advice at all, those who sell it will be expected and obliged to give general instructions as to the dose, and will be sometimes applied to for advice in trifling cases.

The performance of this duty is not of necessity an infringement on the office of the medical practitioner, as it implies no more than the privilege enjoyed by every mother of a family, and by every clergyman in a parish who may keep a medicine chest. The qualified Chemist has often the opportunity of inducing patients to obtain medical advice, who would not otherwise have been aware of the necessity; and a knowledge and appreciation of the responsibility incurred by prescribing, is the greatest security the public could enjoy against the abuse of the privilege under consideration. Whenever a Chemist undertakes the regular treatment of cases, inducing patients to believe that he is a qualified medical practitioner, we consider that he exceeds his province, and becomes a quack; but when in the capacity of a Pharmaceutical Chemist, he gives general instructions, or administers a simple remedy in a case in which the mother of a family might have done the same, he does no more than his duty. In the present state of public habit and prejudice, no further restriction can be imposed, notwithstanding all the visionary arguments of those who advocate an utopian system of perfection.

But the admission that some discretionary power in this respect must be allowed to the Chemist, does not militate against the argument in favour of a legalised qualification purely pharmaceutical. In each branch of the profession the qualification represents the nature of the education implied. A degree in physic does not give a qualification in surgery, neither does the College of Surgeons grant medical degrees, although the Members of each of these bodies must be more or less acquainted with the branch of education specially professed by the other.

The three branches of the profession, Medicine, Surgery, and Pharmacy, are so much connected in many of their details that it is impossible for any person to be fully competent in one of these departments without possessing a certain amount of acquaintance with the others. At the same time the maintenance of each as a distinct branch is desirable, on account of the admitted advantages of the division of labour.

In the case of the Physician and Surgeon no legal obstacle exists to the encroachment of the one practitioner on the special functions of the other. Whatever distinction is observed is founded on medical etiquette rather than on legal prohibition, and in private practice is not unfrequently violated. Each practitioner has the option of selecting any branch of practice which he may prefer, or diverging in any other direction according to circumstances. All that the law requires or ought to require, is that those who undertake an office are qualified to perform it.

The Chemist is under a disadvantage in this respect. He may find, after having commenced business, that his occupation is not in accordance with his taste—he would prefer medical practice, and wishes to become a General Practitioner. Common sense would say let him become qualified and pass an examination. The law says, No!—a candidate may be possessed of the highest attainments, he may have studied in one of the best schools, his character may be unimpeachable—yet he cannot be admitted to examination at Apothecaries' Hall, because he has not served an apprenticeship of five years to an Apothecary! He has no alternative, but either to evade the law, or to relinquish the idea of following the profession for which he has qualified himself. This is an injustice, and we have reason to believe that it induces some persons to practise illegally under the assumed name of Chemists and Druggists, who would otherwise gladly submit to the test of examination.

The special education of the Pharmaceutical Chemist is the foundation of the education of the Medical Practitioner; it is, therefore, not surprising that some of our brethren aspire to encroach on what they consider to be the higher grade. We still think this is a mistake, originating in the degraded state of Pharmacy in this country, and fostered by the rivalry existing between Chemists and shopkeeping Apothecaries.

PHARMACY IN BELGIUM.

As early as the year 1641, Pharmacy was recognised by law in Belgium, as a distinct branch of the profession, and all persons, except legally qualified *Pharmaciens*, were prohibited from preparing or selling pharmaceutical preparations. This law was on the principle recognised by Fourcroy, when he says, "Every person should perform only that for which he is competent in those professions and trades in which health and life are concerned." The prohibition extended to Physicians and Surgeons, it being considered that their qualification to prescribe did not imply a competence to practise Pharmacy. The division of the profession into the three departments, Medicine, Surgery, and Pharmacy, was thus enforced two hundred years ago in Belgium, and the propriety of defining the limits of each branch was admitted.

Some exceptions, however, were made in order to provide for the wants of the public in particular cases. In small villages, in which there was no *Pharmacien*, the *officiers de santé* (a class of persons possessing a very superficial knowledge of Pharmacy) were allowed to sell medicines, and the same privilege was granted to Surgeons in the country, in cases of accidents or other sudden emergencies. In 1818, a law was introduced, permitting Physicians to supply medicines to syphilitic patients, on account of the repugnance of some of these patients to apply at a public shop:

country Surgeons were relieved from the restriction respecting the supply of medicines, and Surgeons in large towns were allowed to furnish external remedies. The privilege in the case of country Surgeons, did not apply to places where *Pharmaciens* were established.

These innovations on the province of the *Pharmaciens*, have been, and still are, a source of considerable annoyance, and rather a warm controversy has prevailed on the subject for several years past. No alteration, however, has taken place, for the law being in favour of the Physicians and Surgeons, has been warmly supported by those bodies, while the *Pharmaciens*, not being united or organised, had, until lately, but little, if any, power or influence on their side.

In the year 1835, a society was established at Antwerp, entitled *Société Libre des Pharmaciens*, the object of which institution was, the protection of the general interests of the body, and the reform of abuses. Ten years afterwards, the society was remodelled, under the title of the *Société de Pharmacie d'Anvers*. The objects of this institution are stated to be—to establish among the Members a spirit of union and cordiality (*confraternité*)—to cultivate pharmaceutical science, and co-operate in its advancement—to protect the rights of *Pharmaciens*—to banish all abuses from the practice of Pharmacy, and to confer on this profession all the amelioration of which it is susceptible.

The society consists entirely of *Pharmaciens*, none who sell or advertise secret remedies are admitted, and any Members found guilty of this offence are expelled. Besides the *ordinary Members**, there are *Honorary* and *Corresponding Members*.

The government is vested in a permanent Honorary President, and a President, Vice-President, Secretary, Assistant Secretary, and Treasurer, annually elected.

The ordinary meetings are held twice in the month, from eight until ten in the evening. The Members are obliged to attend, or to pay a fine of thirty centimes, unless a satisfactory cause of absence be assigned. The Honorary and Corresponding Members are allowed to attend the meetings, and to take a part in the discussions, but not to vote. The business of the ordinary meetings consists in electing Members, reading scientific papers, and discussing any subjects relating to the objects of the society.

The society publishes a monthly journal, entitled, *Journal de Pharmacie, publié par la Société de Pharmacie d'Anvers*, edited by a Committee, consisting of Messrs. Acar, Molyn, Pypers, Siroux, Vanderheyden, and Verbert. It has also a Library, and the books are circulated among the Members under proper regulations. The society has a depôt of medicines, chiefly those not much in use, or recently introduced, as well as mineral waters, which are supplied to the Members on terms just sufficient to defray the expenses. Instruments and apparatus are kept for the use of the Members, who are required to replace or repair any which may be injured while in their charge. A complete set of pure tests is provided for the examination of various substances or preparations.

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* Membres effectifs.

The annual subscription to the Society is, nominally, six francs, but the actual amount is indefinite, on account of the fines for non-attendance, and a variety of other transgressions of the rules.

The above is a brief outline of the Society, as remodelled in March, 1845.

During the previous year, M. J. H. I. Pypers, the Secretary, produced a volume (219 pages 8vo) entitled *Considerations sur la Legislation Pharmaceutique Belge*, which was adopted and published by the original Society. This work contains a very complete account of the existing regulations in the profession, the abuses which prevail, and the controversies between the several parties, with many excellent observations and suggestions, which are well supported by argument. The attention of the *Pharmaciens* in general, having been called to the subject, and the importance of a more extensive union and co-operation having been pointed out, a stimulus was thus given to the institution, the objects of which were extended as above stated. The journal was commenced in January, 1845, and we have been much interested with the information contained in its successive numbers up to the present time, respecting the progress of our brethren in Belgium in the advancement of Pharmacy, the reform of abuses, and the establishment of a cordial feeling among the Members of the body.

The spirit of co-operation and improvement has spread to other parts of the kingdom. During the last two years, the editors of the *Journal de Pharmacie of Antwerp*, have been endeavouring to demonstrate the necessity of a general union, and in the number for June, 1846, we are informed that this has taken place. It is stated that the creation of local societies in various places, had not only encouraged the promoters of the undertaking, but had convinced them that in order to ensure unity of purpose, and consistency in operations, a consolidation of the influence of the whole body was essential. Accordingly, a convocation was fixed for the 8th of June, and delegates of the several local societies were summoned to attend. M. Pasquier, of Liege, proposed a form of regulations, the substance of which was adopted. The Association consists of delegates from the different societies of Pharmacy of the kingdom, the oldest Member being the Honorary President, and the management being vested in a President, a general Secretary, and a Secretary from each of the local societies. Regulations are adopted for ensuring the proper representation of each district, and the harmonious co-operation of all in the proceedings of the Association. The first object in view, is the general petitioning of the Chamber of Representatives (the House of Parliament) for a reform in the law relating to Pharmacy in Belgium. The *Journal de Pharmacie of Antwerp* is recognised as the organ of the Association, in which its proceedings are published, and its general objects discussed and promulgated. M. Verber was appointed Honorary President, M. Siroux, President, M. Pypers, General Secretary. The second meeting of the Association, was held at Brussels, on the 10th of August, and a Committee was appointed to prepare a petition containing a digest of the principal arguments in favour of the desired reform.

A petition is published in the *Antwerp Journal de Pharmacie* of October, which states, that for more than twenty-five years, the *Pharmaciens* have continually petitioned the legislature for a repeal of the laws of the 12th of March and 31st of May, 1818, which experience has shown to have been highly injurious to the pharmaceutical department, and which is represented as being a retrograde movement, reducing the profession to a state of confusion, degrading to its members, and prejudicial to the public. It is said, that although the laws in Belgium are in general worthy to be considered a model for other nations, the legislation respecting Pharmacy is much inferior to that in France, Germany, Spain, Switzerland, Sweden, Norway, and Russia; that while England is endeavouring to introduce reformed legislation in this department, and Holland has commenced a similar undertaking, Belgium, has, for some years past, remained stationary. The laws formerly existing for the protection of *Pharmaciens*, are not properly enforced, and not only are herborists, grocers, confectioners, and other tradesmen invading the province of Pharmacy; but Physicians and Surgeons, availing themselves of the liberty granted to them by the law of 1818, are encroaching, whenever it answers their purpose in a manner which was not contemplated when that law was passed. The *Pharmaciens*, thus injured on both sides, and driven from necessity to a ruinous competition, are obliged to resort to various other branches of commerce, in order to gain a subsistence, and are unable to follow their own profession in a manner conducive to their own credit and the public welfare.

The following is the substance of the alterations which are desired:—That the pharmaceutical education should be so organized as to be placed on a par with the actual state of Pharmaceutical science—that in future none should be admitted but *Doctors in Pharmacy*, who have passed a public examination before a central board, after having obtained the previous grade of *Candidate in Sciences;* and that the title of *Doctor in Pharmacy* should be also granted to existing Pharmaciens who should produce satisfactory theses on pharmaceutical subjects — that the number of Pharmaciens should be limited according to the population; That Pharmaciens legally authorised should have the exclusive privilege of selling medicines; that the dispensaries of hospitals, prisons, &c., should be conducted by Pharmaciens; that the announcement or sale of secret medicines should be altogether prohibited by law, as well as the publication of reports of cures and modes of treatment in political journals or handbills.

This scheme of pharmaceutical reform in some respects resembles that which has been proposed in our own country. The primary object relates to education and examination, and the two grades suggested correspond with the major and minor examinations established by the Pharmaceutical Society. To this proposition no objection could reasonably be urged: it is simply a means of ensuring the competence of all those who fill the responsible station of recognised dispensers of medicine.

The limitation of the number of Pharmaciens according to the population, is a regulation which prevails in Germany, Russia, and some other nations in Europe. From the manner in which it is claimed in Belgium we may infer that the principles of free trade are not so far advanced in that country as they are in Great Britain, where such a proposal could not be entertained.

With respect to the prohibition against all secret medicines, we may observe that this is in accordance with the custom in most European nations, although it is enforced more rigorously in some than in others.

On reviewing the progress of our brethren in Belgium, and the course they have adopted, there is every reason to believe that they have been influenced in some measure by the force of example, and that the success of the Pharmaceutical Society of Great Britain may have had some share in stimulating our neighbours to similar exertion, in the same manner as our own body has been assisted and encouraged by observing the progress of Pharmacy abroad. This kind of emulation and a friendly intercourse between the Chemists of various nations is conducive to the welfare of all parties, and calculated to promote the advancement of Pharmacy generally. An acquaintance with the passing events above noticed should stimulate our members to persevere. We ought always to bear in mind that the proceedings which take place in one country are observed and canvassed in others, and that having embarked in an undertaking, we can neither recede nor remain stationary until it is accomplished, without involving our profession in national disgrace. By means of the Pharmaceutical Society we have laid the foundation of the reform which has been so long required; our proceedings are noticed in the foreign journals, as in a progressive state; but we shall not be acknowledged to enjoy the same rank as Continental Chemists, until we have become recognised by our own legislature as an educated body.

The Pharmaciens in Belgium are in a similar position. They have undertaken to obtain a reform of the laws relating to Pharmacy; they have united in establishing an influential and scientific society, which has become a national institution, and they are now coming forward with spirit and unanimity to claim the protection and assistance of the legislature in completing the reformation of their profession.

PHARMACY IN AMERICA.

We beg to call the attention of our readers to the following Report of the Philadelphia College of Pharmacy, which we have extracted entire from the last number of the *American Journal of Pharmacy*. We have here a demonstration of the influence possessed by a comparatively small number of individuals, when united in zealously conducting an institution designed for the advancement of their profession. Although the plan of the American College of Pharmacy is very different from that of the PHARMACEUTICAL SOCIETY of this country, it was established for the same purpose, and has been attended with a successful result. It has raised the character of the Pharmaceutical Chemists where its influence extends, and its fame has spread throughout Europe:—

REPORT OF THE PHILADELPHIA COLLEGE OF PHARMACY.

The length of time that has elapsed since the organization of the Philadelphia College of Pharmacy, and its steadily increasing reputation and usefulness, have placed it among the established institutions in our country for the promotion of science. It has been thought that a succinct account of its origin, objects, and operations, would prove gratifying to the profession, a large number of whose members in this city are graduates of the institution; and at the same time would tend to disseminate its benefits, by exciting an interest in it, among a class who, from ignorance of its character and history, have failed to avail themselves of them. With such intentions the present notice has been drawn up.

Prior to the year 1821, attention was directed towards, and complaints prevailed with respect to the abuses in the Drug and Apothecary business. To remedy the evils which existed, a proposition was made, on the part of the trustees of the University of Pennsylvania, instigated by the representations of one or more of the medical professors in that school, to grant the degree of Master of Pharmacy to such persons as were recommended as qualified to conduct the business of Pharmacy, and had complied with certain requisitions. This proposition was declined by the "Druggists and Apothecaries of the city and liberties of Philadelphia," on the ground that it was "liable to serious objections, and inadequate to the attainment of the objects which it had in view;" and it was determined at a meeting held

March 13th, 1821, at the recommendation of a committee to whom the subject had been entrusted, to form an independent association. This took the name of *College of Apothecaries.*

From the preamble to the resolution to establish this association, it appears that the objects proposed to be accomplished were, to obviate a "departure from the correct customs and established principles of the Drug and Apothecary business," to direct attention to the "qualities of articles brought into the drug market;" to secure "the discussion of subjects relating to the business," and "communicate information beneficial and interesting to the trade," and to create a "school of Pharmacy," in which lectures should be delivered "expressly for the information and instruction of Druggists and Apothecaries."

The organization of the college being completed by the election of the proper officers, the draft of a constitution, and the adoption of by-laws; in the following year, March 21st, 1822, it was resolved to change the title of the institution to that of College of Pharmacy, and an act of the legislature of Pennsylvania was obtained, bestowing upon it the powers and privileges of an incorporated body. The charter thus obtained dates March 30th, 1822.

One of the first special acts of the college, in conformity with the design for which it was established, was the formation of a school of Pharmacy. The first courses of lectures were delivered in 1821, and they have been continued annually until the present time. From the period when instituted until the spring of the present year, 1846, two professorships only existed: one embracing Materia Medica and Pharmacy; the other, General and Pharmaceutical Chemistry. From the success of the school, however, and the obvious desire for increased advantages of education, it has been deemed proper to separate Pharmacy from Materia Medica, and to erect a new chair devoted to instruction in Pharmacy. During the ensuing season therefore three courses of lectures will be delivered. The degree of Graduate in Pharmacy is the distinction conferred on those who have merited the honours of the institution, by compliance with the requisites for graduation.

In the original organization of the school, the chair of Materia Medica and Pharmacy was allotted to Dr. Samuel Jackson, one of the first and most active members of the college, who filled it until the year 1827, when other and more pressing engagements induced him to resign; he was subsequently elected to the station of Professor of the Institutes of Medicine in the University of Pennsylvania. He was succeeded by Dr. Benjamin Ellis, who filled the station with commendable zeal and industry, and with talents that admirably qualified him for its duties, until the year 1831, when the members of the college and the class were called to mourn his death, in the midst of his honourable and useful pursuits.

Dr. Ellis was succeeded by Dr. G. B. Wood, who had previously occupied the chair of Chemistry in the college. He continued professor of Materia Medica and Pharmacy till the year 1835, when he was called to a field of more extended usefulness, by his election to a similar professorship in the University of Pennsylvania.

Dr. R. Egglesfield Griffith was next chosen professor, and lectured until the following year, when he accepted a professorship in the University of Maryland, and was succeeded by Dr. Joseph Carson, the present occupant of the chair.

The chair of Chemistry having been originally occupied by Dr. Gerard Troost, and subsequently by Dr. George B. Wood, in 1831 its duties devolved upon Dr. Franklin Bache, who continued his labours as teacher of that important branch until, in 1841, he was elected to a similar station in the Jefferson Medical College of Philadelphia. William R. Fisher, a graduate of the institution, who had been professor of Chemistry in the

University of Maryland, and was extensively known as a skilful and accomplished apothecary, was next elected to the station, from which however he withdrew after a single course of lectures. His death, which ensued a short time afterwards, was cause of deep regret to numerous members of the college, to whom he was endeared by long and well tried friendship.

Dr. Robert Bridges, the present professor of Chemistry, succeeded Professor Fisher in 1842.

Soon after the establishment of the school, Solomon W. Conrad was appointed to lecture upon Botany and Mineralogy, in connection with its course of instruction, but it was not found expedient in the then existing state of the college to continue his lectures as a part of the regular course. The establishment of a separate course on Pharmacy, as before stated, is of recent origin. It is under the charge of a graduate of our college, and a practical apothecary of considerable experience, who is already widely known as a writer on chemical and pharmaceutical subjects.

During the changes we have noticed, the class has fluctuated in numbers according to circumstances, though recently with a steady increase, which warrants the hope that it may at no distant period attain a size better proportioned to the numbers engaged in the exercise of our profession, and the advantages to be derived from a thorough and systematic education in the sciences, which are necessary to form the accomplished Apothecary.

Another object which claimed the attention of the college soon after its establishment was the formation of a Library. To attain this object much outlay was made at the commencement, and a respectable collection of books was the result, which, through the subsequent liberality of the members and friends of the institution, both in donations of money and works from their own collections, now numbers 600 vols. This comprehends works not only on Pharmacy and the sciences which are allied to it, but extends to science generally, the arts and other subjects of interest and importance. The library is accessible both to the members and students of the college.

Among the designs of the founders of the college, as stated previously, was that of securing "the discussion of subjects relating to the business," and of communicating "information beneficial and interesting to the trade." In furtherance of these objects, in addition to verbal discussions, from 1821 to 1829, a number of papers were read before the body, and were regarded of sufficient importance to be presented to the public; a journal consisting of four numbers was issued during this period, but appeared at distant and irregular intervals. It was then regarded as important to establish a periodical journal, not restricted to original essays, but to combine with them such information pertaining to Pharmacy and its kindred sciences, as could be procured from the periodicals and works of the day. The work thus commenced was called the *Journal of the Philadelphia College of Pharmacy*. It was continued under this title through six volumes, when in 1835 it was issued by the more comprehensive name of *The American Journal of Pharmacy*. Seventeen complete volumes have now appeared, and from the length of time this publication has been in progress, it has become a rich repository of information. "In its pages are to be found valuable communications from our own countrymen, as well as a summary of the researches of foreign investigators. It is a record of the improvements that have been introduced during the period of its continuance."

Under the management of the College of Pharmacy, the journal has been an influential instrument in enabling it to obviate a "departure from the correct customs, and established principles of the Drug and Apothecary business, and to direct attention to the qualities of articles brought into the drug market." From a perusal of its contents, it will be found that the morals of the profession have not been disregarded, and the kinds of fraud and deception to which Pharmacy is obnoxious, abundantly instanced and freely commented on. It is only to be regretted, that from the limited powers with which the institution is endowed, a personal supervision cannot be exercised, and departures from a correct standard of practice be visited by exposure.

During the year 1842, a change was made in the meetings of the college, by distinguishing between such as were for general business, and such as should be exclusively devoted to scientific purposes, called "Pharmaceutical Meetings." At the latter, matters of general interest to the profession are discussed, and essays read upon subjects of science, which, if of sufficient importance, are afterwards published in the journal.

In the successive revisions of the National Pharmacopœia the college has always taken a lively interest, and assistance has been afforded to the framers, when solicited. For the benefit of the Pharmacopœia of 1840, a thorough revision was effected and a full report drawn up, a large portion of which was embodied in the work. The privilege of representation in the next convention will doubtless draw forth an able co-operation in the labour of revision.

Having experienced much inconvenience from the restricted accommodations of a rented building, in the year 1832 the college erected a hall for its especial accommodation. The building is situated in Zane Street above Seventh. It is spacious and airy, possessing ample room for the lectures and collections belonging to them, for the library, and for the purposes generally of the institution.

The building is 30 feet 9 inches front on Zane Street, by 46 feet in depth, and 57 feet high; it contains four stories, which are accessible by three distinct entrances, and is lighted and ventilated by windows on three sides.

ANNOUNCEMENT OF THE LECTURES FOR THE ENSUING SEASON.

The lectures will be held in the hall of the college, Zane Street, on the evenings of Tuesdays, Thursdays, and Saturdays, beginning the third week in October, and continuing until the latter end of March, two lectures being delivered each evening.

The lectures on Materia Medica will be delivered by Joseph Carson, M.D.

This *course* is devoted exclusively to the consideration of the articles of vegetable and animal origin. It comprises an account of the sources from which they are derived, their character, commercial history, chemical composition, and medicinal properties, with the preparations made from them.

In connection with the characters of genuine drugs, their adulterations will be exhibited, and the means of detection pointed out.

When detailing the sources from which drugs are derived, the *botanical* and *zoological* description of plants and animals affording them will be given, and an exposition of the systematic arrangement to which they belong, as also an explanation of the nomenclature by which they have been designated in our own and other Pharmacopœias.

To render the entire course practical and demonstrative, the lectures will be accompanied with the exhibition of an extensive and complete collection of the substances described, comprising their varieties, modifications, and falsifications; of a collection of accurate drawings, and a full series of dried specimens of plants both exotic and indigenous.

Where it may be practicable, experiments will be conducted in the presence of the class, to show the proximate principles contained in particular articles, the means by which these may be detected or separated, the difference between genuine and spurious articles, and such other chemical facts as may be interesting or important.

The lectures on Chemistry will be delivered by Robert Bridges, M.D.

In this *course* a systematic view of the science and its present condition will be presented to the student.

The imponderable substances will first attract attention, and sufficient time be devoted to caloric, to elucidate its laws and practical applications.

The ponderable bodies will be introduced by a consideration of the reactions of chemical affinity and the laws of chemical combination, with some notice of symbols or chemical notation.

Individual elements, under their distinct classes, will be then noticed, and the inorganic combinations resulting from their union will be considered in such relations to them as may facilitate their acquisition by the learner. Every article of any importance will be described and exhibited both in the crude and perfect condition, and the processes for their production or formation detailed, and when practicable shown. Commercial impurities (whether of design or accident) will receive their requisite attention, together with the best and easiest modes for detecting and purifying the adulterated articles.

Organic chemistry will finally receive its full share of attention, and all its compounds, possessing either general or pharmaceutical interest, will be brought under consideration.

Illustration by experiment and diagram will be introduced wherever they may be rendered available, to convey a knowledge of the fundamental principles of the science, through every channel for the reception of important truths.

The lectures on Pharmacy will be delivered by William Procter, jun.

This *course* will commence with the consideration of the elementary operations which are required in the preparation of medicines. They include, for instance, the management of heat, the manipulations in the processes of pulverizing, dissolving, evaporating, distilling, crystalizing, &c. which will be illustrated, by appropriate apparatus, or by models and diagrams, the tendency of which will be to familiarize the student with many practical operations, but rarely if at all performed in the ordinary routine of the shop.

The second part of the lectures will treat of the collection and desiccation of some drugs, and their selection and preservation generally as a duty of the Apothecary, and of the preparation of those remedies which do not fairly come within the influence of chemical action; comprehending the powders, pulps, extracts, tinctures, distilled waters, volatile oils, infusions, &c., as well as that extensive but heterogeneous list of medicines which are obtained by mixing, as compound powders, confections, pills, troches, cerates, and ointments, and other external remedies. In conducting this part of the course, it is intended to give the student as thorough an insight into the preparation of medicines, as comports with the time afforded; including those which are officinal, and such as have been so far recognized as to be kept ready prepared in the shop.

The third portion of the course will relate to the preparation of those chemical remedies which come within the scope of the Apothecary's laboratory, and which may be prepared by himself when desirable; including many metallic, saline, and organic substances, the ethereal and ammoniacal products, without reference however to their systematic chemical relations, and it will conclude with some general observations on the duties of the Pharmaceutist, bearing especially upon extemporaneous, and toxicological Pharmacy.

FEES.

The matriculation fee is *two* dollars, payable to the secretary of the Board of Trustees, and the price of tickets is *eight* dollars for each course, payable to the professors respectively. The fee for the diploma is *five* dollars. Students who have previously matriculated, and all who are apprenticed to members of the college, are exempt from the matriculation fee, but they must invariably obtain the matriculation ticket before the commencement of each course. Graduates and members of the college, and all students who have paid for two full courses of instruction in the college, are admitted to the lectures gratuitously.

QUALIFICATIONS FOR GRADUATION.

Every person upon whom a diploma of this college shall be conferred, must be of good moral character, must have arrived at the age of twenty-one years, have attended two courses of each of the lectures delivered in the college, or one course in the college, and one course in some other respectable school of Pharmacy, and have served out an apprenticeship of at least four years, with a person or persons qualified to conduct the Drug and Apothecary business; of which circumstance he must produce sufficient evidence to the Board of Examiners.

He shall also be required to produce an original dissertation or thesis, upon some subject of the Materia Medica, Pharmacy, Chemistry, or one of the branches of science immediately connected therewith, which shall be written with neatness and accuracy, and with the evidence of apprenticeship, be deposited with the senior professor of the school, on or before the twentieth of February, of the session in which the application shall be made. He must also be recommended in writing by the Committee of Examination and the professors jointly, and if his application be finally approved of by the Board of Trustees, he shall, upon payment of five dollars to the treasurer, receive the diploma of the college.

COMMENCEMENTS.

Public commencements for conferring degrees upon the candidates who shall have been recommended by the Committee, and approved by the Board, are held at such times as the Board of Trustees may direct.

OFFICERS OF THE COLLEGE.

President.—Daniel B. Smith.
Vice-Presidents.—Charles Ellis and Samuel F. Troth.
Secretary.—Dillwyn Parrish.
Corresponding Secretary.—William Hodgson, Jun.
Treasurer.—Joseph C. Turnpenny.
Secretary of the Board of Trustees.—Edward Parrish.

The list contains 16 Original Resident Members, 79 other Resident Members, and 115 Graduates.

LATE HOURS OF BUSINESS.

At the request of several Correspondents, and in reply to an unjust calumny against the Pharmaceutical Society, we alluded last month to the subject of late hours of business. Before doing so we thought it right to make inquiry in various quarters respecting the facts of the case, believing, as the result showed, that the desired arrangements had taken place in many towns since the establishment of the Society, and that in others a prospect of success existed. Having ascertained that the reform is in progress, and that the unanimity which we have always endeavoured to promote among our brethren appears to be leading to a beneficial result in this as well as in other respects, we concluded that no advantage is likely to arise from the official interference of the Society in a matter which is more suitable for local arrangement among its members. Notwithstanding our endeavours to take a fair and impartial view of the question, and the trouble we took in obtaining correct information, we have been abused by both parties—a further confirmation of the opinion expressed in our last number. Some of our Members are indignant because we ventured to suggest the propriety of allowing young men an hour or two for exercise or improvement in the morning, observing that at their end of the town the morning is the most busy time of the day, and inquiring what authority we have to make young men dissatisfied by such interference. Others blame us for noticing the subject at all, while some of the warm advocates of early closing abuse us in appropriate language in a contemporary journal. One writer is "perfectly disgusted," because our article "bore the impression of having been most carefully got up, so as not to offend either of the two divisions, viz., the assistant and the assisted;" another denounces *the Editor* for an expression used by a *Correspondent*, from whose letter of four pages, on the opposite side of the question, we had quoted four lines. Others indulge in language to which we forbear to apply an epithet. It appears, therefore, that at every step a kick awaits us; even the endeavour to avoid giving offence is stigmatized as a crime. The topic is evidently too combustible for our pages.

A lawyer may edit a pharmaceutical periodical, and call upon the Chemists to shut up their shops. He is not supposed to understand the business, or to be interested in the matter. Consequently those who happen to differ in opinion, pay no attention—those who agree, say Amen. But if a Chemist were to presume to dictate to his brethren respecting the domestic arrangements of their establishments, what result might he expect, if even a suggestion gives offence?

For six years we have laboured incessantly in the endeavour to promote unanimity among our brethren, and by this means to encourage every social improvement. We are satisfied in observing as one of the results of this unanimity, a disposition to shorten the hours of business, and we hope our Members in their several localities, will persevere in attaining this object, to as full an extent as may be found practicable. But we shall on principle avoid embarking in a controversy, which, if we may judge from the animus of some of its promoters, is not calculated to increase the harmony on which the ultimate welfare of our body depends.

TRANSACTIONS
OF
THE PHARMACEUTICAL SOCIETY.

PHARMACEUTICAL MEETING,
WEDNESDAY, DECEMBER 9th, 1846.

MR. SQUIRE IN THE CHAIR.

The Chairman stated, that the first paper to be read was one that had been submitted some months back, to the Scientific Committee, by a gentleman who possessed property in New South Wales, in the district of Swan River, where serious loss was frequently sustained by the farmers, from their sheep and cattle being poisoned by a leguminous plant, which grew in the pastures. The objects which the author of the paper had in view, were, in the first place, to ascertain the name of the plant, of which specimens were deposited in the Museum of the Society; and, secondly, to obtain some information as to the nature of the poisonous principle which it contained, and the best treatment to be adopted for counteracting its effects. The specimen had been shown to two eminent botanists, but they had not been able, in the absence of the flower, to determine the genus to which it belonged. Some experiments had also been made by Dr. Algernon Frampton, at the suggestion of Dr. Pereira, for the purpose of ascertaining the nature of its action on animals. Dr. Frampton's report was appended to Mr. Walter's notice of the plant, and these were proposed to be published with the view of eliciting further information on the subject.

NOTICE OF A POISONOUS LEGUMINOUS PLANT FROM SWAN RIVER, NEW SOUTH WALES.

BY T. R. C. WALTER, ESQ.

The plant under notice, when at its full growth, attains to a height of three or four feet. It is usual for the natives to burn the pastures every two years, and this shrub is then burnt to the ground, but it shoots up with the next rains, at which time it is very injurious to the farmer's stock, its young and tender shoots being probably more tempting, and less easily distinguished, than those of the full grown plant. The blossoms are also frequently eaten by animals, and are, I think, the most poisonous part, for the greatest number of sheep are lost from the poisonous effects of this plant, at the period of its inflorescence.

When the seeds fall on the ground, the wild pigeons greedily feed, and fatten on them; if the crops of these pigeons, containing the seeds, be eaten by dogs, they die, yet the pigeons themselves, when dressed, are good food, and at that season are eaten in large numbers by the settlers. The flesh of sheep and cattle that have died from eating the plant, is poisonous if eaten raw by dogs, but when cooked, either by boiling or roasting, it ceases to be poisonous.

A very small quantity of the plant is sufficient to kill a sheep. A bullock requires more, in proportion to its greater strength. Horses, so far as is known, are not affected by it; at least, this is the prevailing opinion, although it is disputed by some of the settlers.

Soon after a sheep has eaten of the plant, it assumes a wild appearance, holds its head high up, stares about it, then runs round in a circle, and drops down dead, foaming at the mouth.

Horned cattle after eating it, have a dull appearance, with a languid eye; they appear to be in much pain, and lay down and die.

Copious bleeding, with strong doses of castor oil and Epsom salts, have effected cures in some cases.

With sheep, the best treatment has been found to be, to fold them, or shut them up in a close yard, so closely packed, that they can hardly move, and to keep them thus, without food, for thirty-six hours.

REPORT OF EXPERIMENTS MADE TO ASCERTAIN THE ACTION OF THE FOREGOING POISONOUS PLANT.

BY DR. ALGERNON FRAMPTON.

I ASCERTAINED, in the first place, that the leaves contain a volatile principle, for having added some water and distilled, I obtained a colourless liquid having a strong nauseous odour, somewhat resembling that of senna, as it seemed to me, and possessing a faint fatty sickly taste; but although I distilled the same liquid two or three times from successive fresh portions of the leaves, I neither succeeded in separating any volatile oil, nor in obtaining it in a state of sufficient concentration to produce any effect upon the rabbits to which it was administered. I look upon this, however, as merely a negative result, and think it possible that this plant, like tobacco, may contain a poison of a volatile as well as one of an opposite nature.

A decoction of half an ounce of leaves was made and evaporated in a water-bath to about five drachms. This extract was quite fluid, of a dark green colour, of a somewhat bitter and astringent taste, and had a strong smell, but quite different from that of the distilled liquid. A portion of this decoction was poured down the throat of a doe rabbit almost full grown, and it was supposed to have swallowed about a drachm and a half or two drachms. When set down it seemed feeble and giddy, made one or two ineffectual efforts to raise itself on its hind legs against the side of the box in which it was placed, but fell; then sat on all-fours, seemed weak and unsteady, and in five minutes was lying on its side insensible, the respiration going on feebly, but neither much accelerated nor at all gasping—the pulsations of the heart were also feeble. It lay in this state for a few minutes; the action of the respiratory muscles and of the heart became rapidly weaker, and ceased altogether in about ten minutes from the administration of the poison. Except one slight retraction of the head there was no convulsive movement whatever; and there was no evacuation either of the bowels or bladder. The limbs became quite stiff in the course of an hour. On examining the stomach twenty-four hours after death it was found full of food, and softened at its larger extremity, but without any appearance of inflammation; the lungs and other contents of the chest and abdomen appeared healthy. A portion of a decoction like that last used was given to another rabbit at twenty minutes before ten o'clock a.m., on the 27th Sept., 1845; after which it seemed dull and panted violently, but did not exhibit any paralysis or weakness. After half an hour it appeared well, except that it continued somewhat dull and refused food; and was in much the same condition on two or three subsequent occasions when it was seen. At a little after three, while a servant was in the place in which it was kept, it suddenly sprung forward, screaming at the same time, and when I saw it shortly afterwards it was lying on its side, with the pupils of the eyes dilated, the limbs relaxed, and respiration very feeble, as in the last case; and it died at a quarter past three p.m., or about five hours and a half after taking the poison.

On examining it eight hours after death, the surfaces of all the abdominal viscera were found moist, and some serous fluid was in the abdomen, the liver appeared somewhat gorged and the kidneys slightly so. The stomach contained a good deal of food, and the colon was full of a dark green pulpy mass; but though the stomach and colon were examined throughout, no signs of inflammation or congestion were discovered in any part of them: the only change was some softening of the mucous membrane at the cardiac extremity of the stomach, supposed to be cadaveric. In the chest the lungs were found to collapse on opening that cavity, and appeared healthy, except a portion of the upper part of the left lung, which was of a deep red, and completely solidified. The heart felt firm, both auricles were filled with firmly coagulated blood, and in both it was of the same dark colour; the right ventricle was quite empty, the left contained only a small clot continuous with that in the auricle.

To another rabbit about a third part of a thin extract, made from six drachms of the stalks of the plant, was given at half-past nine a.m. of the 10th of October. The animal had been kept without food for the previous twenty-four hours; it seemed at first dull, but showed no sign of pain or stupor, of debility or paralysis. In the course of an hour it had taken food, and then, and on two or three subsequent occasions, when it was seen it appeared quite well, with the exception of being rather less lively than before. It was seen for the last time at half-past four p.m. of the same day, and my impression was that it had escaped unharmed, yet on the next morning at nine it was found dead and quite cold and stiff.

The stomach and colon were full of food, the liver was very much gorged with blood, and the kidneys slightly so; the surfaces of the abdominal viscera were moist as in the former case; the lungs collapsed readily and were quite healthy; the heart contained dark coagulated blood in both auricles, that in the left being quite as dark and somewhat more abundant than that in the right.

In making the above experiments, I had the advantage of the assistance of Mr. Curling.

The short time in which the poison proved fatal in the first experiment may be accounted for by the readiness with which the rabbit swallowed, causing it to have a considerably larger dose; and the symptoms observed agree well with the description given by Mr. James Drummond, in his account of the effects produced upon the cattle in the country where the plant grows wild, where he says, "the finest and strongest animals are the first to perish: breathing seems difficult: they stagger, fall, and die." It was remarked also in some experiments mentioned by him, that animals poisoned with this plant did not the less surely die because they ate, and appeared quite unaffected for some time after taking it. He states, that ten sheep and goats which ate of the plant all died in from three to five hours—a period approaching very nearly to that of the duration of poisoning in the second experiment mentioned above.

Many circumstances lead to the negative inference that the poison is devoid of any acrid or irritant property; purging is not mentioned by Mr. Drummond as one of the symptoms observed, and it did not appear to be present in any of the rabbits; the fullness of the stomach and colon after death, and the absence of any signs of inflammation within those organs go far to prove that they could not have suffered from any irritating agent. I may add, that the operation of the poison seemed unaccompanied by pain, and that when tasted it produced no sensation of acridity either on the tongue or in the fauces.

That the poison has no effect in preventing coagulation of the blood is evident from the clots found in both auricles after death. The state of the heart observed in the two more protracted cases appears to me somewhat remarkable; in these the ventricles on both sides were found firmly contracted and empty, or very nearly empty, while the auricles, both left and right, were distended with blood, which had the same venous character in both. The equal distention of the two auricles, as well as the uncongested state of the lungs themselves, seems to show that the blood was freely transmitted through those organs, yet the identity of its colour on both sides of the heart indicates a want of the natural oxygenating influence; unless it be thought that the time which elapsed between the death of the animal and the examination of its body, was sufficient to allow of arterial blood in the left auricle assuming the darker colour of venous blood.

ON SYRUP OF IODIDE OF IRON.

BY MR. WALTER HEMINGWAY.

NOTWITHSTANDING that excellent formulæ have been published for making the syrup of iodide of iron, this preparation continues to be met with of a bad colour, and often gives dissatisfaction. The fault is probably owing, in part, to want of dexterity in conducting that part of the process which requires the application of heat after the addition of the iodide, either for the purpose of reducing the quantity or dissolving the sugar. To avoid this inconvenience the following alteration of procedure is suggested, and it is believed that it will be attended with less chance of failure:—

Take of Iodine (pure and dry) ℥iij. ʒvij. ℈ij.
Iron filings (clean), ℥ij.
Distilled water, *q. s.*

——add, little by little, the iodine to the iron filings, in a mortar, containing six ounces of water, allowing each action to cease previous to the next addition; agitate the mixture without additional heat until it assumes a green colour; transfer the liquid portion into a measure, wash the filings that remain with half-an-ounce more of water, again, and a third time, mix the washings with the decanted fluid, and make up exactly to twelve fluid ounces and a half; call it "the solution," and keep it in a well stoppered bottle with iron wire and filings; each fluid drachm will contain thirty grains of crystallized iodide of iron. When wanted for use pour off without disturbing the sediment and pass through coarse filtering paper.

From this solution it is proposed that the syrup should be made, and from it also (for the purpose of dispensing) inferior solutions of any required strength may be easily obtained. Should it become brown by keeping, and it will if the stopper is insecure, the bottle must be shaken that the green appearance may be recovered; and should this be the case when syrup is about to be made, time must be given for the dregs to subside, in order that filtration may proceed as rapidly as possible.

To make the syrup:

Take of simple syrup (*white*) P. L. ...... 15 fluid ounces
Solution of iodide of iron, as above, 2 fluid ounces

——put the syrup into an upright pan—a common saucepan lined with enamel is suitable—and accurately balance the whole; next, apply heat, until by a gentle ebullition it has decreased in weight two ounces *avoirdupois;* remove it from the fire; get ready the "solution," and, without loss of time, mix it intimately with the reduced syrup, and bottle directly (if consumption is small) in four-ounce bottles; when quite cold shake well up. Each fluid drachm contains four grains of crystallized iodide, the equivalent of rather more than three grains of the dry.

Remarks.—The advantages of this method depend on its simplicity, and on the preservation of the iodide from the combined action of heat and air; the temporary exposure during filtration is unattended with perceptible decomposition, and the heat remaining after mixture produces no change if the syrup be at once bottled and corked. In colour it is faintly green, and has a density somewhat greater than ordinary syrup. It is necessary to shake when quite cold (and the remark applies to syrups of every description) as the surface becomes watery by evaporation, and decomposition is facilitated. In determining the strength, respect has been paid to the opinion of Dr. A. T. Thomson, which, on this subject, is entitled to the utmost consideration.

Portman Street, Portman Square.

The CHAIRMAN observed that the syrup as well as other preparations of iodide of iron, had occupied a good deal of attention, and the processes for making them had been subjects of frequent discussion during the last few years. The modifications in the process for making the syrup of iodide of iron, which had been suggested from time to time, proved that this preparation was more liable to undergo decomposition, than was at first supposed to be the case. He thought the best form in which to keep the iodide of iron, was that of the *solution*, which, by the simple means he had pointed out some years ago in the *Annals of Philosophy*, could be kept unchanged for any length of time. His process, as was well known, consisted in keeping a coil of iron wire in the bottle containing the solution, which completely preserved its neutrality.

Mr. **Bell** inquired whether the syrup made according to the instructions given in Mr. Hemingway's paper could be kept for any length of time without undergoing decomposition or becoming discoloured? He was induced to ask this question, because he had found that if this syrup was made with only the proportion of sugar contained in simple syrup, it would not long resist the decomposing action of the air. In the process given in the first volume of the Pharmaceutical Journal, a larger proportion of sugar was ordered, and the syrup so made, would keep, exposed to the air, for a considerable length of time, without changing colour in the slightest degree. The only objection that he had found to apply to the syrup made in that way, was, that it sometimes became solid from the deposition of sugar.

Mr. **Hemingway** said he had kept the syrup made by his process for many months, without any perceptible change occurring. If, however, the bottle containing it was only partially full, and the cork was frequently removed, he had found that a slight discolouration took place after some time, on the surface of the syrup, from the action of the air. He thought there was an objection to the use of a larger quantity of sugar than that which he had directed to be used, an instance in illustration of which, had been pointed out to him a few days ago, by Mr. Redwood, who would probably explain the nature of the change which appeared to take place under such circumstances.

Mr. **Redwood** observed, that the essential difference between the process recommended by Mr. Hemingway, and the one which had been generally adopted, namely, that described in vol. i. of the Pharmaceutical Journal, consisted in this, that according to the former, no heat was applied to the syrup after the addition of the iodide of iron, while the latter directed a larger proportion of sugar to be used than could be held in solution without such an application of heat as caused a change in the nature of the sugar. He had been for some time aware, and for the last two years had used the fact for illustration in his lectures, that if cane sugar be heated in contact with iodide of iron, it becomes very readily changed to the state of grape sugar. It was well known that a similar change was produced by the action of dilute acids, and therefore the authors of the London Pharmacopœia had wisely directed that syrup of lemons and other acid syrups, should be made without boiling. Syrup of iodide of iron, made by the process hitherto generally adopted, was very liable to become perfectly solid, in consequence of the uncrystallizable grape sugar which was formed in the process of making it, assuming the crystallizable condition. This change was precisely analogous to that which occurred in the lozenges called *acidulated drops*, when, from being transparent, they suddenly become opaque and crystalline. Now, the object of Mr. Hemingway's modification of the process, was, to obviate this and other changes which occurred in the syrup when heat was used in its preparation. He (Mr. R.) did not agree with the Chairman in thinking that the simple solution in water, preserved by a coil of iron wire, was the best form in which to keep the iodide of iron. The solution preserved in that way, was subject to this objection, that there was a gradual deposition of a brown powder, which had been stated to be peroxide of iron, but which, on examination, would be found to contain a portion of iodine, so that the solution must vary in strength as this deposition took place.

Mr. Pedler had been in the habit of making large quantities of syrup of iodide of iron, and had not experienced the result alluded to by Mr. Redwood. His syrup did not become solid from the formation of the granular crystals of grape sugar, but, on the contrary, large crystals of cane sugar were frequently formed in it. He admitted, however, that he did not use so large a proportion of sugar as that ordered in Mr. Scholefield's process, and he was careful to apply only a gentle heat to dissolve the sugar.

ON THE ELECTRICITY OF GUN-COTTON.

BY MR. J. FORDRED.

About five weeks since, whilst experimenting on some gun-cotton, prepared by the process given by Mr. Taylor in the *Times*, I observed that the cotton, after having undergone the necessary ablutions, and as soon as it was perfectly dry, became endued with remarkable electrical properties. If pulled to pieces whilst still warm, each successive portion adhered to the fingers or to surrounding objects to which it was presented; on being taken into a dark room the mass was observed to exhibit decided sparks of electric light, and the crackling was so loud as to be distinctly heard when the cotton was forcibly pulled asunder or rubbed together—the light evolved being similar to that seen in the well-known experiment of the fracture of a piece of loaf sugar in the dark.

If for the gilt balls in the electroscope of Cavallo there be substituted two flakes of the prepared cotton, and these be held to the fire, they immediately are violently repelled the one from the other, both becoming positively electrified. (Other experiments will suggest themselves to the scientific electrician.) These phenomena are much more marked in a cotton that has been prepared with ordinary commercial nitric and sulphuric acids, than with a cotton which has been made with nitric acid of 1.50 density. I attribute this circumstance to the fact, that a cotton prepared with a weak acid may be heated to a much higher temperature (which much developes the electrical excitation) than that which explodes so readily.

I have tried every means to elicit these appearances from the cotton in its normal condition, but have hitherto failed in developing them. From these experiments it will be seen that we have in this curious article another substance to add to the list of those bodies which become *electrics* or *non-electrics* as they alter their physical condition, for that this is changed in the instance of the gun-cotton the microscope has already shown.

Although in a manner foreign to the subject matter of this short paper, I have sent some slow fire cottons saturated with a strong solution of the nitrates of strontia and barytes. These are proposed to be used for in-door scenic effects, in order to avoid the smoke and sulphurous vapour of the ordinary red and green fires; they are, I believe, the invention of Dr. Ryan, by whom they are shown daily at the Polytechnic Institution, Regent Street.

Church Street, Hackney, Dec. 5th, 1846.

Mr. Fordred stated that he was not aware when the foregoing paper was written, that the fact alluded to in it, had been already noticed by Mr. Bowman, of King's College, who had published it in the last number of the *Philosophical Magazine.*

OLEO-RESINOUS EXTRACT OF CUBEBS.

Mr. Bell laid before the meeting a specimen of a preparation of cubebs which he had recently made, and with reference to which he had intended communicating a paper to the Society. He had found, however, on referring to the last number of the *Philadelphia Journal of Pharmacy,* that a similar preparation had been made by Mr. William Procter, jun., and called by him *ethereal extract of cubebs.*

ON THE ETHEREAL EXTRACT OF CUBEBS.

BY WILLIAM PROCTER, JUN.

M. Soubeiran (*Traité de Pharmacie,* tom. ii., p. 48) gives a formula for making what is called "Oleo-resinous Extract of Cubebs," as suggested by M. Dublanc, and is as follows :—Six pounds of cubebs are directed to be distilled with twenty-four pints of water, the oil separated and set aside; the distilled water is returned to the still with six additional pounds of cubebs, and again distilled, and the oil mixed with that of the preceding operation. The residue in the still is strongly expressed and then exhausted by alcohol of 36° Baumé, the alcohol removed from the tincture by distillation, and the residue evaporated to the consistency of honey; about twelve ounces of extract is thus obtained, which, when mixed with the volatile oil, is completed.

This is undoubtedly a good preparation, but the complexity of the process used in obtaining it is objectionable.

In the analysis of cubebs by Monheim, he found the following ingredients in 1000 parts :—

Waxy matter	30	parts.
Cubebin	45	"
Green volatile oil	15	"
Yellow volatile oil	10	"
Balsamic resin	15	"
Extractive	60	"
Lignin	650	"

In treating cubebs by the process of Dublanc, the product contains all the cubebin and resin, most of the volatile oil, except that dissolved in the water, a part of the extractive and waxy matter; hence it is deficient in the most essential part, the volatile oil.

When pulverized cubebs is treated directly by ether in a displacement filter until exhausted, and the ethereal tincture distilled carefully in a water-bath, the residue has a homogeneous consistence, about that of copaiba, a dark olive brown colour, transparent after the deposition of a small quantity of waxy matter, and possesses the odour, taste, and active properties of the drug in a marked degree. This substance consists of all the volatile oil, cubebin, and resin, most of the waxy matter, none of the extractive, and hence embraces all the active principles of the plant, to the exclusion, if we except the waxy matter, of those that are inactive. It is a true oleo-resin, and preserves its fluidity until the volatile oil is evaporated by a considerable temperature. Dr. Goddard, at whose request this ethereal extract was made, has found its therapeutical effects to fully answer his expectations, and feels assured that the drug is faithfully represented by the preparation. For the guidance of those who may be inclined to make this oleo-resin for medical use, I subjoin a formula:—Take cubebs in powder one pound avoirdupois, and sulphuric ether a sufficient quantity, which is two and a half to three pounds; introduce the powder into a displacer, insert the lower end in a bottle that fits it, add the ether carefully, and cover the top of the filter with a piece of wet bladder, through which several pin holes are made. The flow should be very gradual, and if too rapid the orifice of the filter should be partially closed with a cork —by attention to this point much less ether will be required. The ethereal tincture should be introduced into a large retort, heated by a water-bath, and the receiver well refrigerated. The distillation should not be hurried towards the last. When five-sixths of the ether has passed, it should be separated for use, and the evaporation continued in the retort, observing to keep the temperature below 120° Fahr., so as not to volatilize the essential oil. The product in the retort amounts to two ounces, just one-eighth of the cubebs used.

This preparation may be administered in emulsion, pills, or in capsules; one drachm representing an ounce of the cubebs.

℞ Oleo-resinæ Cubebæ	ʒij.
Pulveris Acaciæ	℥ss.
Sacchari	ʒj.
Aquæ	℥iiss.

M. ft. emulsio.

A table spoonful of this emulsion represents two drachms of cubebs. Should it be desirable to use alum with it, it may be dissolved in the water.

The most complete mode of administering this substance is in gelatin capsules, like those of copaiba, and it was in this form that Dr. Goddard employed it.—*American Journal of Pharmacy.*

Mr. Bell had been induced to make some experiments with the view of ascertaining the best method of concentrating the medicinal properties of cubebs, in consequence of inquiries to that effect being frequently made by medical men. The volatile oil, obtained by distillation, was not unfrequently prescribed, this being considered by some, the most active constituent of the cubebs. But the quantity of oil obtained in this way, amounted only to about 10½ per cent., and it was by no means certain that it did not undergo some change, similar to that which occurred in turpentine, Canada balsam, and other oleo-resinous bodies, when submitted to distillation. The process he adopted, therefore, was to exhaust the cubebs by percolation, with ether, and then to distil off the ether by the heat of warm water. By this means he obtained an oleo-resinous fluid, of a dark colour, and possessing the taste and smell of cubebs in a high degree. He had intended trying whether this fluid produced the same effect as the oil obtained by distillation did, on a ray of polarised light, for by this means the alteration effected in Canada balsam by distillation, was determined; but the dark colour of the oleo-resin of cubebs entirely precluded the possibility of making the experiment. The action of animal charcoal for the purpose of decolourizing the oleo-resin was tried, but while it was quite ineffectual for the purpose designed, it was found to alter the character of the product, probably by the separation of some of its constituent parts, in virtue of the property which charcoal is known to possess, and which has led to its adoption as an antidote for poisons, &c.

But although he had failed in proving, by these experiments, that the oil extracted by ether was different from that obtained by distillation, yet, in other respects he was fully satisfied with the result of his process. The product was greater than that obtained by distillation; he obtained from 15 to 20 per cent. of the weight of the cubebs used; Mr. Procter stated that he obtained only 12½ per cent., a difference which he was unable to account for; the product contained other constituents besides the volatile oil, and on this account more completely represented the cubebs in its sensible characters. Mr. Alexander Ure, at whose suggestion he first prepared it, had used it with much success, and as Mr. Ure was present, he would, perhaps, be good enough to state the result of the trials he had made of it.

Mr. Ure had used the oleo-resinous extract of cubebs for several months past, and had found it a very efficacious remedy. He believed it fully represented the medicinal properties of the cubebs. In some cases of recent occurrence, it had effected a complete cure in about a fortnight.

The CHAIRMAN directed the attention of the meeting to some specimens of dried medicinal plants, which had been sent to the Society, by Mr. Kent, of Stanton, in Suffolk, who had paid much attention to the careful collection and preservation of those indigenous plants included in our Materia Medica, as well as many others, at present but little known or used. All of Mr. Kent's specimens which he had examined, appeared to possess the characters and properties of the respective plants in a high degree.

The Chairman also directed attention to an improved kind of nipple shield, made of lead, which was introduced to the notice of the profession, by Dr. Wansbrough, of Chelsea. These shields are intended for the protection and cure of sore nipples, being placed over the nipple after the child has been nursed, to protect the part from external injury. Any escape of milk, which usually takes place, giving rise, from contact with the lead, to the formation of lactate of lead, is found to produce a beneficial effect, as this salt exercises a curative influence on the sore part.

ORIGINAL AND EXTRACTED ARTICLES.

ON SOME SPECIES OF THE GENUS AMYRIS,

WHICH ARE LITTLE KNOWN.

BY W. HAMILTON, M.B.

THE genus Amyris abounds in species, many of which claim the Antilles as the place of their nativity. A similarity of properties appears to characterize the whole, and there can be little doubt that, by careful investigation, these properties might be rendered available for the purposes of art or medicine. They all abound, more or less, in a resinous fluid which might be easily and economically collected, and its virtues readily ascertained. Hitherto, however, they have been either wholly overlooked, or applied in the rudest and least scientific manner to the services of Pharmacy. The following merit more particular attention.

Amyris balsamifera, rose-wood, shrubby sweet wood, sweet Amyris, or white candlewood. A lofty tree, abundant in the woods of St. Anne's parish, in St. Catherine's parish, and the woods near Bull Bay, in the parish of Port Royal, Jamaica; where it is highly prized for its timber, which has a fine grain, takes a high polish, and exhales a delightful fragrance. The bark yields, by incision, a fine resinous fluid of a light yellow colour, fragrant smell, and acrid aromatic taste. This is considered by many to possess qualities similar to those of the celebrated balm of Mecca, formerly in such high repute, but which avarice, defeating its own object by the amount of adulteration, has succeeded in bringing into disrepute.

The fruit, like the bark, abounds in a similar fragrant liquid resin, which is contained in small cells, resembling those found in the rind of the lemon or the orange. From these, as well as from the bark—this resinous balsam might be abundantly obtained.

The infusion of the leaves, taken in place of tea for breakfast, is strongly recommended by Long, who mentions the case of a gentleman who, after pursuing this plan for a considerable time, was able to read small print without the aid of glasses, which had not been the case before.

Dr. Wright conjectures, that an oil, equal to that of rhodium, might be obtained, by distillation, from its wood.

It appears not improbable, that, under the name of Amyris balsamifera, at least three species, botanically distinct, have been confounded from the neglect of careful examination; for practical purposes, this, however, is not likely to be very material, as a general sameness of properties appears to pervade the whole. Mr. Anthony Robinson speaks of meeting with three kinds differing from each other in the size of their stems, the dimensions of their leaves, and aromatic fragrance of their leaves and timber; these, however, may have been merely varieties, resulting from the accidents of soil and situation; or the same species at various stages of its growth. I shall notice them hereafter somewhat more at length.

In Nevis, on the contrary, I met with what, if my notes, made at the time, are to be depended upon, is not only specifically but generically distinct. Of this tree, which, under the impression that it constituted a species of Amyris, I named the Amyris hexandra, the following particulars are extracted from a little work published for me in 1825, by Treuttel and Würtz, of Soho Square, under the title of "*Prodromus Plantarum Indiæ Occidentalis*," p. 34.

"A. hexandra. Caule arboreo, procero [5-7 orgyali] ramoso; foliis impari-pinnatis, trijugis; foliolis integerrimis, ovatis, breviter obtusè et subobliquè acuminatis, basi in petiolum brevem subdecurrentibus, utrinque glabris, subtùs reticulato-venosis; floribus paniculatis, parvis, viridescentibus, semper hexandris; paniculis axillaribus terminalibusque; calyce cyathiformi integerrimo; petalis tribus viridescentibus, integris; staminibus sex, brevissimis; ovario oblongo, glabro, infero; stylo brevi; stigmate obtuso; fructu [drupæ nucleus?] membranaceo, elliptico, utrinque acuminato, univalvo, rudimento seminis abortientis.

"GUM ELEMI TREE. GUM ELIM TREE.—Habitat in locis nemorocis subhumidis, subfrigidis atque subalpinis, montis centralis insulæ Nevis; florens a Junio usque ad Septembrem. Arbor procera succo resinoso fragrante, è cortice lævi cinereo læso profluente, scatens. Ab Amyride floribus *hexandris tripetalis*, et ab A. elemifera, foliis *utrinque glabris*, nec *subtùs tomentosis*, satis distincta; nonne generi prorsus diverso amandanda?

Referring to this plant, in a letter, dated "Angers, 7ème Janvier, 1827," my learned friend, M. Desvaux, late curator of the *Jardin des Plantes* at that place, and a distinguished botanist, wrote to me as follows:

> "*M.* de Candolle ayant adopté les genres *Icica* et *Amyris;* un pen eloignés même l'un de l'autre, votre espece me semble se rapprocher du genre *Amyris*, et malgré sa difference de parts 3-6, au lieu de 4-8, devoir s'y rattacher; car souvent cette variation ne forme même qu'un caractére d'individu. Le caractére du fruit est tres bien: *Drupa nucleo chartaceo indehiscente monospermo.* Dans tous les cases l'espece est publié et nouvelle; ainsi vos observations existent; au surplus le nom ELIMIA n'est point employé encore."

Notwithstanding this high authority, in the absence of a further examination, either of the living plants at Nevis, or well preserved specimens obtained from thence, I should hesitate in acting upon Professor Desvaux's suggestion, and constituting this into a distinct genus, under the appropriate name of ELIMIA.

It appears to extend to most of the adjoining islands, as a tree, closely resembling it, is found in similar situations in St. Kitts, where it is called by the same name, and in the French islands, where the white concreted resin found adhering to its bark is termed *encens*, and employed as such in the ceremonies of the church. But as I never had an opportunity of examining the fruit or inflorescence of any of these, I cannot estimate the degree of affinity between them, and the trees from which I succeeded in procuring specimens for examination in Nevis; and for which I was indebted to the kindness of my lamented friend Mr. Tobin.

A tree, corresponding in description with that of Nevis, yields a similar production in the Hispano-American settlements of South America, where the resin is called *tavanouca.*

The finest specimen which I recollect to have seen, grew in a cool ravine in the Dodand of Nevis; a lovely spot, abounding in botanical rarities of the highest interest: this tree rose, with a straight branchless stem, to a height of at least sixty feet, where its branches formed a spreading head of the most exquisite symmetry, and afforded shelter to multitudes of monkeys who sported among the leaves, secure from all disturbance; for, from the smoothness of its greyish bark, and the enormous girth of its trunk, it was out of the question to climb, and would have been sacrilege to cut it down. It is more than probable that the very same giant of the forest, at whose blossoms, elevated far beyond my reach, I cast many a longing, lingering look, upwards of thirty years ago, still rears its proud head above its less aspiring companions, in the self-same spot, whence others more enterprising, or perhaps more fortunate than myself, may yet succeed in obtaining specimens of the fruit, leaves, and flowers. At the base of this tree I found numbers of the fallen fruits, from one of which my description was made after my return to Europe. The racemes of flowers were procured for examination from some specimens of humbler growth, gathered for me by some of Mr. Tobin's negroes. It were much to be wished, that the account now given might attract the attention of some one resident on the spot, and induce him to fill up the blank, which circumstances compelled me to leave; either by making a fresh examination of the tree, or sending well preserved specimens to England.

A spirituous solution of the dried resin, is a popular remedy in cases of coughs.

The Amyris maritima, or sea-side balsam, is an unaspiring shrub, growing abundantly in the most arid and barren spots near the sea, in, I believe, every island in the West Indies; and, according to Lunan, is common on the banks of the Rio Cobre, blossoming from May to October. In Jamaica, it is called the rose-wood, yellow candle-wood, or yellow sanders; and in rich soils, where it attains any magnitude, is considered valuable, being of a yellowish white, handsomely clouded, and susceptible of a high polish. The leaves, when bruised, give out an odour less agreeable than that of the Amyris balsamifera, but as the plant is more abundant, and grows in the most barren soils, it is probable that the peculiar resin which distinguishes the genus, might be more economically obtained from it by distillation.

Barham speaks of a timber, which he calls *rosemary wood*, that was most probably obtained from some species of amyris. His account is as follows:—

> "Pulling down some old houses, I smelt a very strong smell of rosemary, which made me inquire into the reason of it. They told me, that there was some *rosemary wood* among the timber of the houses. I then desired that they would get me some of it, which they did. I found it was only the bark that smelt, which no rosemary exceeded. Some will have it to be a sort of clove bark tree, which grows in great plenty upon the main continent. I first found this tree on Bachelor's Plantation, which was afterwards mine, and is now well known to all or most planters in Jamaica. I carried some of the bark with me to England in 1717, which kept its scent very well, and I question not, but it would be found, upon experience, to be very useful to distillers, and of many medicinal uses."—*Hort. Amer.*, p. 195.

Such is Barham's account, from which it appears somewhat extraordinary that no farther notice has been taken of it in the long interval of more than a century and a quarter which has since elapsed. What then is the plant which yields this fragrant bark? and to what purposes does it promise to be applicable?

The three species of Amyris of which I have already spoken, as discovered by Mr. Anthony Robinson, and regarded by him as distinct from the Amyris balsamifera, are described by that gentleman as follows:—

1. *Amyris foliis ternatis pinnatis, pediculis marginatis, racemis alaribus.*—This he says, is a small tree of about fourteen or fifteen feet, with a trunk of about six inches in diameter, branching out at a little distance above the ground, and forming

a close, compact head. The bark, where not covered by lichens, is of a reddish brown, and the small racemes of minute white flowers proceed from the alæ of the leaves. Of the fruit he says nothing.

2. *Amyris hypelate*, with a calyx of five concave, roundish, unequal sepals, ciliated at the margin ; a corolla of four roundish unequal petals, larger than the sepals, with a vacant space, as if designed for a fifth petal; a small three angled-ovary, resting upon eight glands, each of which gives origin to a filament shorter than the petals ; the ovary was three-celled, the stigma capitate, and the anthers cordate.

3. *Amyris Philippæa.*—Growing in dry rocky soils, and one of the handsomest trees in Jamaica ; its bark is aromatic and bitter. The leaves are unequally pinnated, having the rhachis or common footstalk margined ; the leaflets are sessile, obovate, veined, and of a lively green, consisting of one pair, with a terminal one. Mr. Robinson furnishes no other particulars, nor does he assign any particular localities to these new species. They appear however to merit further examination, the last more especially.

14, *Octagon, Plymouth.*

A NEW ALKALOID IN GUN COTTON.

BY MR. PORRET.

At a meeting of the Chemical Society, held on Monday, the 21st of December, Mr. Porret read a paper, in which he states that he has obtained evidence of the existence of an alkali in gun-cotton. He considers the explosive cotton to be a nitrate of this alkali, and he has succeeded in isolating the alkali in the following manner :—f ℥ij. of nitric acid, sp. gr. 1.45 was added to 50 grains of gun-cotton, and the mixture heated to 240° Fahr., when solution of the cotton was effected, accompanied by the disengagement of hyponitrous acid (NO_3). The same result took place on treating the gun-cotton with oil of vitriol. The solution in nitric acid, when cold, was nearly, but not quite, neutralized with carbonate of potash, and bicarbonate of potash was then added in sufficient quantity to completely neutralize the mixture. Heat was now applied, when a gray powder, consisting of nitrate of potash, mixed with the carbonate of the new alkali, was deposited. On treating this powder with alcohol, sp. gr. .813, the carbonate of the alkali was dissolved in small quantity, and obtained in crystals on the evaporation of the spirit. It was found to be strongly alkaline to test paper.

Mr. Porret had not further examined this alkali, which he proposes to call *lignia*. Having by previous experiments satisfied himself that gun-cotton consisted of the elements of *lignine*+*nitric acid*, he concluded that *lignia* must be an oxide of *lignine*, consisting of *lignine*+O_2.

[The case cannot be considered proved until the new body has been more completely isolated and examined.]

VETERINARY MEDICINES.

(*Continued from Vol. V., p.* 426.)

Demulcents and Restoratives.—Demulcents (from *demulceo*, to soften) are softening and diluting medicines, intended to sheath the parts with which they come in contact, and protect them from irritating secretions or substances. The substances administered as demulcents, frequently act at the same time as *Restoratives*, such as gruel and bran mashes.

DEMULCENT DRENCHES.

No. 1.

℞ Linseed, bruised, ℥iv—Boiling Water, Oiij—Honey ℥iv. Let it stand till cold. To be given in two doses.

No. 2.

℞ Marshmallow Root, ℥iv—Water, Oij. Boil for a few minutes, and strain, then add Honey, ℥iv—Linseed Oil, ℥ij—Gum Arabic, ℥ij. Mix for two doses.

BRAN MASH.

Put half a peck of bran into a pail, and pour enough boiling water over it to thoroughly wet it ; stir it well with a stick, cover it over and let it stand until of the temperature of new milk. Oats, malt, treacle, or honey, may be added to it, to render it more nutritious. [Bracy Clark.]

MALT MASH.

To be made with malt in the same way as the bran mash.

BLANCH WATER.

Pour boiling water over three or four handfuls of bran ; stir it well up with a stick ; cover it over, and let it stand for a few minutes ; then add as much water as may be desired.

It is useful in cases of inflamed lungs or bowels, and after purging physic, being in these cases preferable to mere water. [Bracy Clark.]

OATMEAL GRUEL.

Put half a pint of good fresh oatmeal into a bowl, add about half a pint of cold water to it, and with a wooden spoon beat it well up for some time; then boil it with more water to form a gallon of gruel. Gruel for horses ought not to be thick. [Bracy Clark.]

Diuretics and Diaphoretics.—Diuretics (from διουρησις, a discharge of urine) are medicines which, when taken internally, augment the flow of urine from the kidneys. Diaphoretics (from διαφορεω, to carry through) are medicines which, when taken internally, increase the discharge by the skin.

DIURETIC BALLS.

No. 1.

℞ Castile Soap—Resin, āā ʒiij—Nitre, ʒiv—Oil of Juniper, ʒj—Honey, *q. s.* to make into a ball. [White.]

No. 2.

℞ Camphor, ʒj—Nitre, ℥ss—Castile Soap, ʒiij—Oil of Juniper, ʒj—Tar q. s. to make a ball. [White.]

No. 3.

℞ Nitre, ℔j—Castile Soap, ℔ss—Barley Meal, ℔iiss, or sufficient to form a mass. [Bracy Clark.]

No. 4.

℞ Common Turpentine—Soap—Nitre, āā, ℔ss—Barley or Linseed Meal, *q. s.* to form a mass.

DIURETIC POWDERS.

No. 1.

℞ Yellow Resin, ℔j—Nitre, ℔ij—Cream of Tartar, ℔j. Mix ʒvj, ʒx, or ʒxii in a mash. [Blaine.]

No. 2.

℞ Nitre, ʒvj—Camphor, ʒiss. Mix for a dose. [White.]

DIURETIC DRINKS.

No. 1.

℞ Glauber's Salts, ℥ij—Nitre, ʒvj—Warm Water, Oj—Sweet Spirits of Nitre, ʒj. Mix, and give it with the horn. [Bracy Clark.]

No. 2.

℞ Glauber's Salts, ℥iv—Nitre, ℥ss—Sweet Spirits of Nitre, ʒij—Oil of Juniper, ʒj—Thin Gruel, Oj. Mix, and give it with the horn.

STIMULATING DIAPHORETIC BALLS.

No. 1.

℞ Emetic Tartar*, ʒiss—Camphor, ʒss—Ginger, ʒij—Opium, ℈j—Oil of Carraways, gtt. xv—Honey, *q. s.* to form a ball. [White.]

No. 2.

℞ Antimonial Powder, ʒij—Carraway Powder, ʒvj—Ginger, ʒj—Oil of Aniseed, gtt. xx—Honey, *q. s.* to form a ball. [White.]

DIAPHORETIC OR FEVER BALLS.

No. 1.

℞ Camphor, ʒiss—Nitre, ʒiv—Calomel—Opium, aa gr. xx—Honey and Linseed Meal, *q. s.* to form a ball. [White.]

No. 2.

℞ Emetic Tartar*, ʒiss—Tragacanth Powder, ʒij—Syrup, *q. s.* to form a ball. [White.]

No. 3.

℞ Camphor, ʒij.—Nitre, ℥j—Honey, *q. s.* to form a ball.

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* Some practitioners consider ʒiss of Emetic Tartar an excessive dose, as this medicine occasionally produces violent purging in horses. Those who entertain this opinion administer it in doses of six or eight grains.

ALOISOL, A PRODUCT OBTAINED FROM ALOES.

BY M. EDMUND ROBIQUET.

This substance is obtained by the action of caustic lime on aloes. Three ounces of aloes, and one and a half-ounce of quick lime, were reduced to a fine powder, mixed together, and passed through a sieve. It is well not to use more than this at once, otherwise secondary products will be formed, which it is difficult to separate. The powder is introduced into a small porcelain or luted glass retort, adapted to a receiver; a moderate heat is applied, until white vapour, accompanied by inflammable gases, appear, the heat is now withdrawn, and the action allowed to proceed spontaneously. The reaction which takes place, is very energetic; the apparatus is suddenly filled with white opaque vapours, inflammable gases are disengaged in abundance; the contents of the retort appear to be in a state of agitation, and oily drops of a citrine colour, condense on the inner surface of the adapter. Care must be taken constantly to cool the receiver, so as to prevent the loss by evaporation of the oily liquid, which consists almost entirely of *aloïsol*. It is especially important not to hasten the first part of the process by applying too much heat, as the reaction would in that case be so violent as to destroy the apparatus. When the disengagement of gas and vapour has ceased, the oily liquid distils free from other products. The temperature may now be augmented without inconvenience, if care be taken to regulate it in such a manner that the distillation proceeds drop by drop. The process is thus conducted until the temperature has been brought up to a red heat, after which only a milky liquid, with a few drops of *aloïsol* is obtained. The condensed products, contained in the receiver, are now removed, and a very strong heat again applied. In this second stage of the process, similar phenomena occur to those which take place when the mixture is first heated to 284° Fahr. The *aloïsol* is produced in very small quantity, and it is therefore necessary to repeat the operation five or six times, and to mix the products in a well-stoppered bottle. After allowing them to stand for twelve hours, they separate into two strata; the upper one consists of *aloïsol* in an impure state, and very acid; the lower one is an acid opalescent water. There is also sometimes found at the bottom of the bottle, a few drops of a non-volatile greenish yellow oil, carried over with the vapours. The stratum of *aloïsol* is now removed, by means of a pipette, and shaken with baryta water, until it ceases to produce any acid reaction; it is then put, together with chloride of calcium, into tubes hermetically sealed, so as to prevent oxidation from air, and left in this state for several days. To obtain the *aloïsol* in a state of perfect purity, it is only further necessary to distil it once or twice by means of an oil-bath, and to collect only that part which comes over at a temperature of 266° Fahr.

As *aloïsol* absorbs oxygen from the air with great facility, especially at the temperature of 266° Fahr., the first third of the product ought to be separated and preserved for analysis. The last third will be sufficiently pure for the study of its properties. Both these products should be kept in sealed tubes, excluded from the light.

One hundred parts of aloes yield only one part of pure *aloïsol*.

Properties of aloïsol.—Prepared as above directed, *aloïsol*, in its normal state, is a colourless, or very pale amber-yellow liquid; it has a sharp and penetrating odour, reminding one at the same time of the oils of potato-spirit and of bitter almonds. It is perfectly insoluble in water, and dissolves in all proportions in alcohol and in ether. It boils at 266° Fahr. Its density in the liquid state at a temperature of 59° Fahr., is .877; it does not solidify when reduced to a temperature of 4° Fahr.

Aloïsol possesses the chemical properties of an aldehyde, thus it absorbs oxygen from the air with so much rapidity, that on merely pouring it from one vessel to another, it becomes sensibly acid, and reddens litmus paper.

Put, in the anhydrous state, in contact with dry ammoniacal gas, it rapidly absorbs it at a very low temperature, and is transformed into an oily liquid, soluble in alcohol, but insoluble in ether and in water. This oily liquid, which is, no doubt, *ammoniacal aloïsol*, is so unstable, that at one or two degrees above the freezing point, it separates again into *aloïsol* and ammoniacal gas, which is disengaged. If a little cooled sulphuric acid be added to the *ammoniacal aloïsol*, in a freezing mixture, there is no apparent action, but if they be removed from the influence of cold, energetic action occurs, and a large quantity of aloïsol is seen to separate.

Ammoniacal aloïsol may be obtained by passing a current of dry ammoniacal gas into an anhydrous ethereal solution of aloïsol, surrounded by a freezing mixture. A very fluid oil is soon seen to fall to the bottom of the vessel at a temperature of —4° Fahr., and this can only be preserved under the influence of intense cold, or under strong pressure.

If the *ammoniacal aloïsol* be removed from the freezing mixture, and exposed to a temperature of two or three degrees above the freezing point, it separates into ammoniacal gas, which is disengaged, and normal aloïsol which dissolves in the ether.

When a mixture of alcoholic solution of aloïsol, and ammoniacal nitrate of silver, is gently heated in a small flask or glass tube, the sides of the vessel become coated with a film of metallic silver, which in twenty-four hours assumes the character of a mirror.

Aloïsol, exposed to the contact of air, absorbs oxygen with rapidity ; it assumes a reddish-brown colour, and is transformed into an acid heavier than water, to which I shall give the name of *aloïsic acid*. This phenomenon of oxidation may be rendered more marked by pursuing the following method: Put a piece of caustic potash into the bottom of a test-glass ; moisten it with ether ; then cautiously pour over it some water, which will only attack the potash as the ether is displaced ; this substitution of the liquids takes place slowly enough to admit of the requisite quantity of water being added, so that the upper stratum shall contain no alkali ; a few grammes of *aloïsol* are then added, which from its lightness floats on the surface of the water ; but from the oxidizing action of the air, the *aloïsol* is soon transformed into *aloïsic acid*, and this substance, in the form of large reddish coloured drops, falls through the liquid to the bottom of the vessel, and disappears in the excess of alkali, with which the lower stratum is saturated.

If, instead of submitting the aloïsol to a mode of oxidation thus slightly energetic, it be exposed to the action of nitric acid, oxide of copper, chromic acid, or chlorine water, it undergoes a much greater alteration, the nature of which deserves to be mentioned.

Action of Chromic Acid on Aloïsol—I introduced from thirty to forty-five grains of aloïsol into a small pipette, the two extremities of which were drawn into capillary tubes, and bent into the form of a small syphon, open at both ends. The pipette was then dropped through the tubulure of a small retort, containing 154 grains of chrystallized chromic acid, and 462 grains of water ; the beak of the retort was drawn out in the flame of a lamp and bent so as to be at a right angle with the lamp over which it was placed ; a tube sealed at one end was used as a receiver, which was plunged in cold water. The retort was heated gradually, and the liquid in the pipette expanding with the heat, and escaping at the two openings, mixed with the chromic acid, and was thus slowly submitted to its influence. In the course of half-an-hour, during which time this action continued, there was a constant disengagement of the vapour of water and carbonic acid, and at the same time a very distinct odour of bitter almonds.

The condensed water in the receiver was milky, very odorous, and not at all acid. Thinking that the product contained oil of bitter almonds, and desiring to obtain it in greater quantity, I recommenced the operation with 154 grains of aloïsol put into two pipettes, and I used the same receiver, containing the milky product of the first operation. The liquid obtained was so opaque as to resemble milk; on shaking it with a little ether it instantly became clear. The ethereal solution was decanted, and exposed to the air in a small glass capsule. After a few minutes there was an oily film on the surface, and this after a further exposure of a few days was transformed into small prismatic needles, easily recognised as benzoic acid.

If, instead of a solution of chromic acid, oxide of copper be used, the same reaction takes place, only it is necessary to employ a large excess of the oxide, and to apply a heat of 392° Fahr.

It is evident, from what has been stated, that *aloïsol*, under the influence of chromic acid, or oxide of copper, is transformed into water, carbonic acid, and oil of bitter almonds.

The following formula will explain this reaction :

$$C_{16}\,H_{12}\,O_6 + O_6 = C_{14}\,H_6\,O_2 + C_2\,O_4 + H_6\,O_6,$$

that is to say, two equivalents of aloïsol, *plus* six equivalents of oxygen, give one equivalent of oil of bitter almonds, *plus* two equivalents of carbonic acid, *plus* six equivalents of water.

Chlorine water transforms *aloïsol* into aloïsic acid, without the formation of any other body; there is only a slight smell of bitter almonds developed.

The following is the result of the analysis of aloïsol:—

	I.	II.	III.	IV.	Theory.	
Carbon		61.54	60.28	60 42	61.54	C_8
Hydrogen	7.71	7.68		7.26	7.69	H_6
Oxygen		30.78		32.32	30.77	O_2
		100.00		100.00		

Journal de Phamacie.

ON THE RED AND YELLOW COLOURING MATTERS OF SAFFLOWER.

BY ADOLPH SCHLIEPER.

It is well known that safflower contains two pigments, one yellow, the other red. The latter only is employed in the arts. Schlieper has made an examination of these two pigments in order to discover their mutual relations. He encountered various difficulties, and obtained some interesting results, of which the following account is an abstract.

1. OF THE YELLOW COLOURING MATTER.—To obtain the yellow colouring matter forty pounds of good Bengal safflower were treated with successive portions of water, until the liquid was only faintly coloured. These diluted fluids were then acidulated with acetic acid, and mixed with an excess of a solution of acetate of lead. A white flakey precipitate, composed of oxide of lead and gummy or albuminous parts, was immediately formed; whilst a compound of oxide of lead and the yellow colouring matter remained in solution in the acetic acid. The filtered liquid was neutralized by ammonia, and the compound of the yellow colouring matter and lead thereby thrown down, as a voluminous flakey, dirty orange-yellow precipitate. The separation of the pigment from the lead was only partially effected by sulphuretted hydrogen. The liquid filtered from the sulphuret of lead was of a light yellow colour, and was darkened by

alkalies. The greatest part of the colouring matter, however, remained with the sulphuret of lead; for when the latter was treated with water mixed with alkali, the fluid acquired a deep brown colour. The decomposition was best effected by means of diluted sulphuric acid. Some previous experiments showed that the yellow pigment was easily oxidized in the air; it was necessary, therefore, in performing all the operations to exclude the air as much as possible.

As a small surplus of sulphuric acid could not be avoided in decomposing the lead precipitate, acetate of baryta was added to the deep yellow liquid that had been filtered from the sulphate of lead, and this liquid, after filtration, was evaporated in a large retort to the consistency of treacle, and then treated with absolute alcohol, by which a quantity of gum, albumen, &c., was precipitated in the form of a greyish yellow coagulated mass. The yellowish dark brown clear solution of the colouring matter, in alcohol, was then also evaporated (the air being excluded) to the consistency of treacle, and then mixed with excess of water, by which the pure yellow colouring matter was dissolved; and the oxydized, or altered colouring matter, left in the form of a brown sediment.

The yellow colouring matter greatly resembles extractive matter. A watery solution of it is altered by exposure to the air, and a brown oxidized extractive matter is soon precipitated. This is insoluble in water, but is readily soluble in alcohol. The watery solution of the yellow colouring matter has an acid reaction. It is of a deep brownish yellow colour, strongly stains substances. It has a bitter saline taste, and a peculiar smell. As the yellow colouring matter is so readily decomposed, it was found impossible to obtain it in the free state, sufficiently pure for analysis. The only way to analyse it was to examine some compound, in which this matter was enabled to resist the decomposing influences of the atmosphere. Now a combination with lead was best adapted for this purpose, as it would be obtained perfectly pure; and, moreover, because the pigment once combined with the oxide of lead was no longer liable to become oxidized.

As the compound of lead with the oxidized colouring matter was almost insoluble in diluted acetic acid, while the pure pigment was on the contrary very soluble in this liquid, the separation of the two substances could be easily effected. To the watery solution of the pigment was first added some acetic acid, and then an excess of sugar of lead, which produced a dirty brown precipitate (a compound of the oxidized colouring matter and oxide of lead). The filtered clear yellow fluid was then mixed with ammonia, by which the pure yellow colouring matter combined with lead, was precipitated in the form of voluminous deep yellow flakes. The precipitate being well washed, was dried at a temperature of 212° Fahr. and then analyzed.

2. Carthamin, or the Red colouring matter of Safflower.—This was obtained in the usual way. The safflower having been deprived of its yellow colouring matter by repeatedly washing it with water, was mixed with water holding in solution 15 per cent. of crystallized carbonate of soda, so as to form a thick paste; and the mixture was left for several hours. The red pigment entirely dissolves in the alkaline fluid, whilst the safflower acquires a dirty yellow colour. The red liquid obtained from the safflower by pressure, was almost neutralised by acetic acid; and then cotton put into it; and on this carthamin precipitates, provided that the alkaline reaction of the liquid be prevented by the successive addition of small quantities of acetic acid. At the expiration of twenty-four hours the cotton was taken out and washed, no more carthamin remaining in the yellowish red liquid. The cotton was then digested for half an hour in water, which held in solution 5 per cent. of crystallized soda. By this process an alkaline solution of the pure colouring matter was obtained, as the cotton readily gives out this pigment when placed in contact with

alkalies. As the carthamin undergoes, during its contact with alkalies, uninterrupted decomposition, it is advisable, to accelerate all the operations as much as possible. Phosphate of soda was tried as a substitute for soda, but it did not answer. The solution of carthamin was, immediately after the discoloured cotton had been taken out, supersaturated with citric acid, by which almost instantaneously a flakey, light, beautifully crimson-red precipitate of carthamin was formed. Frequent attempts to precipitate directly the pigment from the alkaline liquid by acids, never succeeded, the the product obtained being always very impure. The precipitate thus obtained was repeatedly washed, and the liquid separated by decantation and filtration.

As long as this contains salts the process goes on very well; but when this is no longer the case, the liquid can scarcely be filtered, as the finely distributed carthamin penetrates through the pores of the filter. In a moist state, it forms a voluminous, very finely distributed mucilaginous precipitate, which greatly contracts on drying, and in that state it is almost impossible to remove it from the paper. When dried on paper in thin layers it forms a coating which has a brilliant metallic lustre, not inferior to that of muroxid and hydrochinon.

On account of this property, and also because carthamin when finely divided or in a solution yields a magnificent red colour, this colouring matter must be reckoned among the most beautiful substances of organic chemistry. Pure carthamin not being removable from the filter, the paper was torn in small pieces and repeatedly saturated with strong alcohol, which perfectly dissolved the pigment. From the clear deep red solution the alcohol was distilled off in a water-bath; and the blackish-red residual liquid was left to evaporate in a cup over sulphuric acid in vacuo. A thick crust of carthamin having a magnificent green colour formed on the surface, and afterwards sank to the bottom, being succeeded by another crust. At the same time thick, apparently crystalline crusts of carthamin deposited on the bottom of the cup; but when these were examined by a powerful magnifier, no definite forms were discovered, the carthamin then appearing to be amorphous.

The liquid from which the carthamin was precipitated had a reddish yellow colour, and contained oxidized carthamin. By the addition of water this new-formed yellow pigment was dissolved, leaving behind the carthamin, which was washed on a filter till the water acquired a red colour. When dry the pure carthamin formed a granular powder of a darkish green colour, which by rubbing acquired a metallic lustre, and presented a red colour only when very finely divided.

The following table shows the formulæ for the two colouring matters as deduced from chemical analysis :—

Yellow Pigment of Safflower	$C_{24}\ H_{15}\ O_{15}$
The same altered by the air	$C_{24}\ H_{12}\ O_{13}$
Carthamin........	$C_{14}\ H_{8}\ O_{7}$
Carthamin changed by boiling with alcohol......	$C_{14}\ H_{7}\ O_{9}$
Oxides of Carthamin formed by the action of alkalies	$C_{14}\ H_{7}\ O_{10}$ $2(C_{14}\ H_{8}\ O_{7})+HO+O$ $=C_{28}\ H_{17}\ O_{16}$

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ON THE SOLUBILITY OF THE HYDRATES OF THE OXIDES OF IRON, COPPER, AND COBALT,

IN A SOLUTION OF CAUSTIC POTASH.

BY VÖLLER.

A SHORT time since, the author noticed that the potash ley in Liebig's apparatus, after having been impregnated by the combustion of organic substances, with a certain quantity of carbonic acid, precipitated some reddish-brown flakes, which, on examination, were recognised to be oxide of iron. The latter must have been contained in solution in the ley, since this was perfectly clear, before the carbonic acid had passed into it, and a direct experiment, which I made with recently precipitated oxide of iron, and which was treated with very concentrated potash ley, free from carbonic acid, proved, that oxide of iron is certainly, to a small degree, soluble in caustic potash. Whoever is acquainted with the quantitative analysis of minerals, must know how difficult it is to separate oxide of iron from aluminous earth by caustic potash. If weak potash ley be employed for the separation of these two oxides, only a small portion of the aluminous earth is dissolved, and the greatest part of it remains with the oxide of iron, but if the mixture be treated with very strong potash ley, the result is always an aluminous earth, coloured yellow by oxide of iron. It is, therefore, desirable to employ for the purpose of separating aluminous earth from oxide of iron, a moderately concentrated potash ley, and to repeat the digestion several times.

Völler has also made some experiments with other metallic oxides, which are generally considered as insoluble in excess of potash, and has found, that both oxide of cobalt and oxide of copper, dissolve, in great quantity, in concentrated potash ley.

The latter solution may be advantageously used, in order to discover very small quantities of grape sugar, which, as is well known, reduces oxide of copper to the state of suboxide. Berzelius, in his *Manual*, page 559, supposes that the fact which has been mentioned by some Chemists, that a small quantity of oxide of copper dissolves in a great surplus of caustic potash, is ascribable to a portion of organic matter. Völler, therefore, paid particular attention to the absence of all organic substances, and arrived at the conviction, that oxide of copper dissolves in great quantity in caustic potash, if the ley be of sufficient quantity and strength. The solution of oxide of copper in potash, can be diluted with much water without precipitating oxide of copper. If the solution be evaporated to dryness, a blue fused mass is obtained, which dissolves in water with a beautiful green colour. If chlorine be conducted through the potash solution of oxide of copper, the latter becomes dark green; but as soon as the potash is perfectly saturated with chlorine, the combination which has taken place, is decomposed, and oxide of copper is precipitated with the simultaneous development of gas.—*Ann. der Chemie*, lix.

PREPARATION OF FERROCYANIDE OF ZINC.

BY M. JONAS.

THIS salt may be obtained by digesting, with a gentle heat, some metallic zinc with Prussian blue in powder, diffused in hydrochloric acid. Hydrogen gas is disengaged, and the liquid gradually loses its blue colour. The reaction is not concluded for several days. If the zinc contains any lead, this is deposited in the metallic state.—*Journal de Pharmacie.*

ON GLYCERIN.

BY F. ROCHLEDER.

THE different kinds of fats are, as is well known, decomposed into a fatty acid and glycerin, by strong bases or acids. The following method of obtaining glycerin, differs from all those hitherto known. If castor oil be dissolved in absolute alcohol, and a current of dry hydrochloric acid gas passed through the heated liquid, the fat becomes decomposed. If after the acid has sufficiently acted, the liquid be shaken with water, an emulsion is formed, which soon separates into a supernatant oily layer, and a strong acid aqueous layer. The latter is to be separated, by means of a syphon, and evaporated in a platina-cup over a water-bath. At first, a great quantity of hydrochloric acid evaporates, but ultimately a yellowish mass remains behind, having the consistence of treacle. If this be treated with ether, one portion is dissolved, while another portion remains unacted on. After the evaporation of the ether, an oily substance remains. This consists of a combination of the fatty acid of the castor oil, with the oxide of ethule. The substance not soluble in ether, after being dried *in vacuo*, has the consistence of treacle, is of a pale yellow colour, and possesses all the properties of glycerin. The oxide of glyceryle of the fats which are contained in castor oil, was consequently replaced by the oxide of ethule, whilst the water, which the alcohol yielded during its conversion into ether, combined with the oxide of glyceryle.—*Ann. der Chemie*, Bd. xlix.

CONVERSION OF AMMONIA INTO NITRIC ACID.

BY M. DUMAS.

WHEN a current of moist air, mixed with ammonia, is directed on chalk wetted with a solution of potash, at a temperature of about 212° Fahr., there is formed, after some days, a notable quantity of nitrate of potash.

This experiment, which accords with the results of M. Kulhmann's investigations on nitrification, was suggested to me by the observations I have recently made on the conversion of sulphuretted hydrogen into sulphuric acid.—*Comptes Rendus.*

ON THE SUPPLY OF IODINE FROM THE KELP OF GUERNSEY.

BY PROFESSOR GRAHAM.

AT a recent meeting of the Chemical Society, Mr. Graham stated the result of an examination he had made of the ashes of sea-weeds, used as fuel on the island of Guernsey. His attention had been directed to this subject, on the occasion of a recent visit to the island. Having observed that large quantities of deep sea fuci were collected by the inhabitants, spread out to dry in the fields, then used as common fuel in their houses, and the ashes carefully saved as a valuable manure for their land, it occurred to him that the ashes thus obtained, would be likely to contain a larger quantity of iodine than the ordinary kelp, both on account of the source from whence the fuci were derived, and the comparatively low temperature at which the combustion was effected, for there could be little doubt, that in the manufacture of Scotch kelp, a portion of the iodide of sodium present, was lost by sublimation. He had brought away some of the Guernsey sea-weed ashes, and had since submitted them to an examination, which proved that they contained much more iodine than any specimens of kelp that he had previously met with.

Considering the diminished supply of iodine from Scotland, and the consequent high price which it had recently attained, he thought it important that the attention of manufacturers should be directed to this as a new, and probably more prolific source of iodine than those hitherto resorted to.

ON THE USE OF OXALATE OF ALUMINA IN THE PURIFICATION OF SUGAR.

M. Mialhe has proposed a process for separating the lime remaining in combination after being used in the manufacture of sugar, which is founded on the property possessed by oxalic acid of completely precipitating the alkaline earth from its solutions.

The oxalic acid is used in combination with alumina, as oxalate of alumina, so that while the acid forms an insoluble compound with the lime, the alumina, which is also insoluble in the syrupy solution, carries down with it all the colouring matter of the impure sugar.

This process, should it prove economical, will possess advantages over that consisting in the use of charcoal, as it ensures the entire separation of the lime, which the other does not.—*Journal de Chemie Médicale.*

CHROMATE OF CHROMIUM.

BY M. RAMMELSBERG.

When solution of chrome alum is mixed with solution of neutral chromate of potash, a reddish-brown colour is at first produced, and afterwards a brown precipitate is formed in a very yellow liquid.

This precipitate dissolves in hydrochloric acid, forming a yellowish-green solution; ammonia precipitates oxide of chromium from it, leaving chromic acid in solution. Digested with potash, it readily yields chromate of potash and oxide of chromium.

The following formula represents its composition:—

$$3\,Cr_2O_3,\ 2\,CrO_3,\ 9\,HO.$$

Journal de Pharmacie.

ANIMAL MAGNETISM SUPERSEDED.—DISCOVERY OF A NEW HYPNOPOIETIC.

We learn on the authority of a highly respectable physician of Boston, U. S., that a Dr. Morton, a surgeon-dentist of that city, has discovered a process whereby in a few minutes the most profound sleep may be induced, during which teeth may be extracted, and severe operations performed, without the patient being sensible of pain, or having any knowledge of the proceedings of the operator. The process simply consists in causing the patient to inhale *the vapour of ether* for a short period, and the effect is to produce complete insensibility—or, as the writer says, intoxication. We quote the following case on the same respectable authority:—"I took my daughter last week to Martin's rooms to have a tooth extracted. She inhaled the (vapour of) ether about one minute, and fell asleep instantly in the chair. A molar tooth was then extracted without the slightest movement of a muscle or fibre. In another minute she awoke, smiled, and said the tooth was not out, had felt no pain, nor the slightest knowledge of extraction. It was an entire illusion."

⁂ The facts are here so candidly stated that any one may put the new process to the test of experiment. Dr. Morton has made no mystery of his proceedings, like the tribe of hypnotic quacks who have lately perambulated the country. Some caution must, however, be observed in employing the vapour of ether in the way suggested. Ether is a strong narcotic, and its vapour speedily produces complete lethargy and coma; it is exceedingly volatile, and rapidly absorbed and diffused through the body, especially when brought into contact with the extensive surface of the air-cells of the lungs.

In one case it has destroyed life, and in another caused apoplexy. Thus an individual may not awaken so readily as the young lady whose case we have here quoted.* It must be regarded as producing a state of temporary poisoning in which the nervous system is most powerfully affected; and, as in concussion or narcotic poisoning, sensibility may be so destroyed that operations, which in the healthy state would occasion severe pain, may be performed without any consciousness on the part of the patient. The respectability of the source from which we derive our information prevents us from doubting that the writer has accurately described what he saw. The awakening exactly *one minute* after the operation must of course be regarded as an accidental circumstance, depending on the dose of ethereal vapour inhaled. One statement, however, appears to us to require explanation. We can understand the production of insensibility and the temporary loss of consciousness from the effects of ether; but we do not comprehend how, when the individual was perfectly roused to consciousness, there could be the slightest doubt as to whether the tooth was in or out of the mouth! All who have undergone this operation know that from the imperfect sense of touch possessed by the tongue, that the gap occasioned by the loss of a tooth appears about ten times as large as it really is. Then, again, we can believe that no pain might be felt during the operation; but how can any narcotic annihilate pain *in futuro*, when its effects on the nervous system have entirely ceased? Ordinary sleep often produces a temporary loss of sensation of pain; but this immediately returns in the waking state.

* We have since learned, from another quarter, that the respiration of the vapour in the manner described has been tried in numerous cases without the occurrence of any accident.—*Medical Gazette*, pp. 1085, 6.

[Many years ago, when experimenting on nitrous oxide gas, we became acquainted with the effects of ether when inhaled. The supply of gas being exhausted, a teaspoonful of ether was introduced into the bladder and inhaled in the same manner. Several persons present tried the experiment, and the result in most cases resembled that produced by the gas. The action of the ether is however more sedative. During the first two or three inspirations the pungent taste of the ether is perceived, after which a peculiar kind of exhilaration is felt, which increases until external objects are no longer observed, and a state of coma ensues, which continues for a few minutes. The sensations are very much like those produced by inhaling the nitrous oxide, and the result resembles that of spirits when taken into the stomach, with this exception, that it subsides much more speedily, and produces less depression afterwards.—ED. PH. J.]

THE SEDATIVE EFFECT OF ETHER TESTED IN THE OPERATING THEATRE OF THE NORTH LONDON HOSPITAL.

SINCE the above was in type, we have been favoured by Mr. Ransome, the house-surgeon of the North London Hospital, with the particulars of the following cases:—The first is that of Frederick Churchill, a patient, who had been for some time in the hospital with a disease of the knee-joint. Amputation being found necessary, he was taken into the operating theatre for that purpose at two o'clock on Friday, the 18th of December.

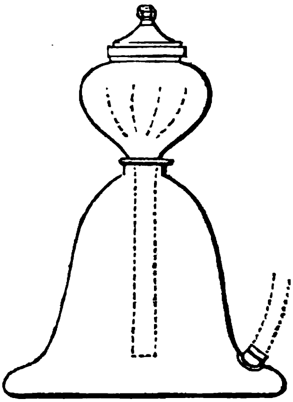
The vapour of ether was inhaled by means of a vessel resembling an ordinary inhaler. At first the patient appeared not to understand the method of effectually inhaling the vapour into his lungs; but as soon as this was properly explained, two or three complete inhalations produced a state of unconsciousness. As soon as this was observed, Mr. Liston lost no time in amputating the limb, and the patient was removed to his bed insensible of pain, having been in the theatre very little more than five minutes, including the time occupied in inhaling the ether, as well as the subsequent tying of the arteries. It is a curious circumstance, that the patient replied to several questions during the operation, but afterwards, on being interrogated, declared that he had suffered no pain at the time.

When consciousness returned his first remark was that he felt cold, and his subsequent sensations are described as being similar to those of patients under ordinary circumstances after a similar operation. When the stump was dressed ether was not inhaled, as it was considered unlikely that the effect would continue a sufficient length of time.

The second case was that of an out-patient, who had a painful operation performed on his toe, while under the influence of ether, and apparently insensible. He afterwards described his sensations as having been peculiar, but not attended with pain. The subject will be further investigated at the North London Hospital.

We have been informed that some experiments have been made at other hospitals, but hitherto with less marked success than in the above cases.

APPARATUS FOR INHALING ETHER.



Mr. Squire has contrived an apparatus for this purpose. It resembles a Nooth's apparatus — a sponge wetted with ether being placed in the upper part, the vapour being heavier than atmospheric air, descends through the tube to the lower vessel, to which is attached a flexible tube and mouthpiece. In this tube there is a valve to prevent the expired air returning into the vessel. Mr. Squire informs us that the ether should be washed with water in order to purify it.

The apparatus used in America was more simple, being more like an ordinary inhaler, with the valve in the tube near the mouthpiece. A common Mudge's inhaler, with the addition of the valve, would answer the purpose, in the absence of Mr. Squire's improved apparatus.

The old plan of introducing a teaspoonful of ether into a bladder or silk bag, and inhaling it in the same manner as nitrous oxide gas, is not nearly so effectual as the above; since the same air is inhaled repeatedly, either with small additions, which dilute the ethereal vapour, or in a vitiated state, without the requisite oxygen.

By means of the above apparatus, the supply of ethereal vapour mixed with a due proportion of fresh atmospheric air, is constant, and the effect is more uniform and speedy.

We are informed that Dr. A. T. Thomson has been in the habit of exhibiting to his class the effects of ether when inhaled, in order to demonstrate the analogy in its effects with that of the nitrous oxide gas. The practice has recently been discontinued, as it was found to irritate the lungs of some persons, and in one case produced inflammation. Mr. Squire considers that this arose from the ether not having been previously washed with water.

NOTICES OF BOOKS RECEIVED.

Clinical Facts and Reflections; *also Remarks on the impunity of Murder in some cases of presumed Insanity.* By Thomas Mayo, M.D., F.R.S., Physician to the St. Mary-le-bone Infirmary, &c. 8vo, pp. 217. London : Longman and Co.. Paternoster Row.

The Microscopic Anatomy of the Human Body in Health and Disease. By Arthur Hill Hassall, F.L.S., M.R.C.S., &c. Part V. With duplicates of plates 1 to 7 inclusive, to be substituted for those issued with Parts 1 and 2, which, in the printing, were not satisfactory to the Author.

The Literary and Scientific Register and Almanack for 1847, *dedicated by special permission, and under the immediate patronage of His Royal Highness Prince Albert.* By J. W. G. Gutch, M.R.C.S.L., Foreign Service Queen's Messenger. London : Simpkin and Marshall.

This pocket-book sustains the character we have given it for the last four years.

The Chemist's Counter Companion ; *or complete Retail Price Book. Compiled for the Leicestershire Association of Chemists and Druggists.* By Joseph Goddard. Second Edition, revised and enlarged. London : Sold by Messrs. Barclay and Sons, 95, Farringdon Street ; and by all Wholesale Druggists.

At the time the first edition of this Price Book appeared, we had commenced a similar undertaking in the belief that such a work was much wanted. Being anticipated by Mr. Goddard, we very gladly handed over to him the materials already collected, which he has embodied in the second edition of his work. The work is now much more complete than the one we had in contemplation would have been, as it contains, besides the list of articles kept by dispensing Chemists in London, a variety of additions useful chiefly to the Country Chemist. By this means it is made available to the trade generally in all parts of the country.

CAVENDISH SOCIETY.

When we gave a general notice of this Society a short time ago, the Prospectus was not quite ready for publication. We now have the pleasure of submitting it to our readers, and hope the undertaking will receive that support which it deserves. We frequently receive inquiries from correspondents who are anxious to obtain English translations of Foreign works, not to be had except in the original language. The Cavendish Society affords the means of supplying these wants ; and suggestions from Members respecting any works which they may desire will without doubt receive due attention from the Council. It must also be recollected that the amount of benefit received by each subscriber will depend entirely on the number of subscribers, as the expense of translating, editing, and putting in type a work, is the same for 500 copies as for 5000, the additional expense of the 4500, being merely the paper and printing. Each Member should, therefore, use all his endeavours to add to the list by representing to his friends the advantages of the Society.

PROSPECTUS.

PRESIDENT.—Thomas Graham, Esq.

COUNCIL.—A. Aikin, Esq.; D. T. Ansted, Esq.; J. Bell, Esq.; W. T. Brande, Esq.; J. T. Cooper, Esq.; M. Faraday, D.C.L.; G. Fownes, Ph. D.; A. W. Hofmann, Ph. D.; Percival Johnson, Esq.; W. A. Miller; J. Pereira, M.D.; R. Philips, Esq.; L. Playfair, Ph. D.; T. Redwood, Esq.; G. O. Rees, M.D.; E. F. Teschemacher, Esq.

TREASURER.—Henry Beaumont Leeson, M.D, St. Thomas's Hospital, Southwark.

HONORARY SECRETARIES.—Robert Warington, Esq., Apothecaries Hall, Blackfriars; George E. Day, M.D., 3, Southwick Street, Hyde Park.

1. The object of the Society, is, the promotion of Chemical Science by the translation and publication of valuable Works and Papers on Chemistry, not likely to be undertaken by ordinary publishers.

2. Every Subscriber of One Guinea annually, shall be considered a Member of the Society, and be entitled to one copy of every book published by the Society for the year to which his subscription relates; such subscription to be paid in advance, and to be due on the first day of January in each year.

3. The number of copies of the Society's publications shall, unless otherwise directed by the Council, be limited to the number of actual Subscribers who shall have been enrolled, and paid their subscriptions.

4. The Society will commence its publications, as soon as in the opinion of its Council, a sufficient number of Subscribers shall have been obtained.

The number of volumes to be published by the Society, must be regulated by their size, and by the number of the Annual Snbscribers; but the Council contemplate at present the publication of not less than three volumes each year.

The following works have been brought under the consideration of the Council:—

1. *The Life and Works of Cavendish.* 2. *Gmelin's Chemistry.* 3. *Rammelsberg's Dictionary of the Chemical Part of Mineralogy.* 4. *Kopp's History of Chemistry.* 5. *Buff's Outlines of Experimental Physics for Chemists.* 6. *Otto's Economic Chemistry.* 7. *Berthier on Assaying.* 8. *G. Rose's Chrystallography.* 9. *A Volume of Recent Memoirs and Tracts on Chemical Philosophy.* 10. *A Volume of Recent Memoirs on Animal and Vegetable Physiology.*

All communications on the business of the Society to be addressed to the Honorary Secretaries.

London, November 13th, 1846.

LOCAL SECRETARIES.—*Bath:* John Tylee, Esq.—*Birmingham:* John Percy, M.D.—*Bolton:* H. H. Watson, Esq.—*Bristol:* W. Herepath, Esq.—*Brighton:* F. Busse, Esq.—*Cambridge:* W. H. Miller, M.A.—*Derby:* A. J. Bernays, Esq.—*Downpatrick:* J. F. Hodges, M.D.—*Dublin:* J. Apjohn, M.D.—*Edinburgh:* George Wilson, M.D.—*Glasgow:* J. J. Griffin, Esq.—*Hull:* Thomas Pearsall, Esq.—*Leamington:* Isaiah Deck, Esq.—*Leeds:* W. West, Esq.—*Manchester:* John Davies, Esq.—*Newcastle:* Thomas Richardson, Esq.—*Norwich:* William Stark, Esq.—*Plymouth:* John Prideaux, Esq.—*Sheffield:* Jas. Heywood, Esq.—*Southampton:* W. B. Randall, Esq.—*Tenby, South Wales:* R. W. Falconer, M.D.—*Truro:* W. F. Karkeek. M.R.C.V.S.—*Winchester:* A. D. White, M.D.—*Wolverhampton:* B. Walker, Esq.

THREATENED INDICTMENTS UNDER THE APOTHECARIES' ACT OF 1815.

The following statement appeared in the *Times* of December 23. It would be imprudent to offer a hasty opinion on a subject so important in its bearings on Physicians and Surgeons, and probably, in some degree, on our own body. We, therefore, defer the consideration of it until next month. In the mean time we may observe that the main question hinges upon the definition of the term "practising as an Apothecary." On this point will depend whether the new version of the Act will affect the members of our body or not.

"THE QUALIFICATION OF APOTHECARIES.

"The Society of Apothecaries entertaining an opinion, which they have publicly expressed upon several occasions, that a penal check upon the practice of medicine by unqualified persons is indispensably necessary for the protection of the public, and that the pecuniary penalty imposed by the Apothecaries Act is but ill adapted for checking such practice, have long desired that a more summary mode of proceeding against illegal practitioners should be adopted; and they have advocated an alteration of the law in this respect, whenever a favourable opportunity for so doing has presented itself. A recent decision of the Court of Queen's Bench, in a criminal prosecution instituted against an attorney for practising without qualification, seemed to lead to the conclusion, that notwithstanding the specific pecuniary penalty imposed upon unqualified persons practising as Apothecaries, persons might be indicted criminally as for a misdemeanor. This decision appeared to the Society to suggest a mode of proceeding for checking the illegal practice of medicine, which might be attended with such important results that they determined to lose no time in obtaining the highest legal opinions upon the subject. They, therefore, laid a case before the law officers of the Crown, and it will be found from the answers given to the questions submitted to the Attorney and Solicitor-General, in consultation with Mr. F. Robinson, that it is the opinion of those learned gentlemen that an indictment will lie against a person who has practised as an Apothecary without legal qualification. The Society subjoin the Questions proposed to counsel and their Answers thereto:

"QUESTIONS.

"1. Whether an indictment will lie against a person who has practised as an Apothecary without legal qualification, notwithstanding the particular penalty imposed upon persons so practising by the 20th section of the act, and the disability imposed upon them by the 21st section? and if you should be of opinion that an indictment will lie,

"2. In what courts, metropolitan or provincial, could such an indictment be preferred? and could it be preferred at the instance of a private prosecutor?

"3. Would it be competent for the Society of Apothecaries to prefer such an indictment, notwithstanding the interest given to the society in the pecuniary penalties imposed by the 20th section, and the particular remedy given to the Society for the recovery of such penalties?

"4. What would be the extent of punishment which could be inflicted by law upon a person convicted of the offence of practising as an Apothecary without legal qualification?

"5. Can any more summary proceeding than an indictment be resorted to, for the punishment of persons practising as Apothecaries without legal qualification?

"ANSWERS.

"1. We think that an indictment will lie against a person who has practised as an Apothecary without legal qualification, notwithstanding the particular penalty imposed by the 20th section of the act, and the disability imposed by the 21st section.

"2. The indictment may be preferred in any of the ordinary criminal courts having cognizance of misdemeanors committed in the county or place in which the party has so illegally practised, and it may be preferred at the instance of a private prosecutor.

"3. We think it is competent for the Society of Apothecaries to prefer the indictment.

"4. The punishment, as in case of other misdemeanors, would be fine or imprisonment, or both, at the discretion of the Court.

"5. We are not aware that any more summary proceeding than an indictment can be resorted to, for the punishment of persons practising as Apothecaries, without legal qualification.

"John Jervis,
"David Dundas,
"Frederic Robinson.

Temple, Nov. 23.

"It is, perhaps, hardly necessary for the Society to point out the increased facility which this mode of proceeding affords for putting the law in force against unqualified practitioners.

"Instead of proceeding for the recovery of penalties by a civil action, which in the case of a country practitioner could only be tried at the spring and summer assizes, an indictment may be preferred at the quarter sessions and at the assizes also; and, instead of the power of proceeding against unqualified practitioners being restricted, as in the case of the specific penalty imposed by the statute, to the Society of Apothecaries, it will be competent for any person to prefer an indictment who may be disposed to do so.

"Another distinction between the two modes of proceeding, which is likely to operate still more powerfully as a check upon illegal practice, is this, that whereas an individual against whom a judgment for a penalty is obtained, under the present form of proceeding, can relieve himself from the consequences of his offence by obtaining his discharge under the Bankrupt or Insolvent Acts, an individual found guilty on indictment of having practised as an Apothecary without legal qualification, will be punishable by fine and imprisonment, and will have to undergo whatever measure of punishment the Criminal Court may in its discretion award.

"The Society sincerely hope that a public intimation, that the penalties of the law can now be enforced against illegal practitioners of medicine more summarily than heretofore, will deter all persons from practising as Apothecaries who have not given such evidence of their competency to practise as the law demands. But if individuals who have not possessed themselves of a legal qualification will persist in practising in the absence of such qualification, they will do so at the risk of being criminally indicted for the offence at the instance of any individual prosecutor who may be induced to prefer an indictment against them.

"The Society on their part, will be ready, as they have ever been, to enforce the law to the extent of the means placed at their disposal; but those means are inadequate to the institution of frequent prosecutions. It may, therefore, be anticipated that indictments will be preferred at the instance of other parties; and the Society take this opportunity of stating, that they will endeavour to render such experience as they may have acquired in administering the Act of 1815 available in furthering the ends of justice; and that they will be prepared, upon proper application, to furnish any information in connexion with the subject of illegal practice which they may have it in their power to afford.

"*Apothecaries' Hall, December* 10."

The following advertisement is inserted in another part of the paper, for the purpose of calling especial attention to the above:

"The Society of Apothecaries invite the attention of the medical profession and the public to the fact, that the law admits of a more summary mode of proceeding against persons practising as Apothecaries without legal qualification than has been hitherto supposed. The Society, having received the opinion of the law officers of the crown, that such persons may be indicted criminally for a misdemeanor, notwithstanding the pecuniary penalty imposed upon them by the Apothecaries' Act; and the Society desire, under these circumstances, to CAUTION all persons who may be now practising as Apothecaries without having given such evidence of their qualification as the law has required, that by continuing such practice they will expose themselves to the risk of a criminal prosecution at the instance either of the Society of Apothecaries, or of any private individual who may be disposed to put the law in force.

"By order of the Master and Wardens,
"ROBERT B. UPTON, *Clerk.*"

A QUACK DOCTOR COMMITTED FOR MANSLAUGHTER AT HULL.

MRS. F. R. COX having suffered for above three years from a fungus tumour on her wrist, and having been told by her medical advisers that it was incurable, was looking forward to the operation of amputation, when she happened to meet with a quack named Cotton, who professed to cure all disorders. She placed herself under his care on the 21st of November, and he rubbed some red powder on the tumour and inflamed parts of the arm. In a day or two, she was seized with violent vomiting and purging, and excruciating pains in various parts of the body, and she died on Tuesday, the 8th of December, notwithstanding the most skilful treatment of various surgeons. A *post-mortem* examination was ordered by the Coroner, and it was found that the powder which had been applied to the arm, consisted chiefly of arsenic, which had been absorbed into the system. The Jury returned a verdict of Manslaughter, and Cotton was fully committed for trial.

TO CORRESPONDENTS.

O. G., A.P.S.—(1.) The boiling point of oil of lemons and other volatile oils, is much higher than that of spirit of wine, which accounts for so much of the oil being left in the still. Distillation is unnecessary in the case alluded to.—(2.) See vol. iii, p. 508.—(3.) Application should be made to Mr. Smith, 17, Bloomsbury Square.

E. I. S.—A yellow or golden colour may be given to oil by means of arnatto.

W. S.—We cannot give an opinion in such cases to anonymous correspondents.

M. P. S. (Strand).—See the above.

A. K. A.—(1.) Iodine dissolves very readily in rectified spirit. The existence of an insoluble deposit, is a proof of impurity.—(2.) We have never met with sand as an adulteration of blue pill; if present, the pill-mass should of course be rejected.—(3.) Cold water.—(4.) Application should be made to Mr. Smith, Secretary, 17, Bloomsbury Square.

An "A.P.S."—See vol. iii, p. 66.

W. J. Retford.—(1.) We are not acquainted with any preparation that will prevent the hair from turning gray and falling off.—(2.) White Liniment for chaps and chilblains. See vol. ii., p. 722.

"Juvenis."—See the above.

F. I. I.—In order to weigh correctly the colocynth pulp, as directed in the Pharmacopœia, it is necessary to remove the seeds.

C. D.—See the above.

O. (Chester).—*Mistura ferri comp.* when fresh and properly made, is of a light green colour; we have never met with rose-water so acid as to interfere with this result.

A. (Newcastle).—(1 and 2.) Apply to the Excise.—(3.) Chloride of platinum is a good test for potash.—(4.) Such jokes are quite unjustifiable.

G. E. S.—In treating bones with oil of vitriol for agricultural purposes, they should be crushed, and the mixture digested for several days at a moderate heat.

C. W.—*Terchloride of Carbon.* See vol. iii., p. 170, and vol. v, p. 412.

"A Medical Student."—(1.) Pills are silvered by shaking them with silver leaf in a box, the surface of the pills having been previously moistened with mucilage.—(2.) The hair dye mentioned is safe, provided the solutions be not too strong.—(3.) Solution of cyanide or iodide of potassium, will remove the black stains caused by nitrate of silver.—(4.) Magnesia can only be dissolved in water to a very small extent without the aid of some acid, which more or less alters its medicinal action.—(5.) Purgative.

J. B. S.—The effect of litharge in dyeing hair black, depends on the presence of sulphur in the hair.

"Archimedes."—See vol. iv., p. 394.

"Cincinnati."—(1.) We should expect some of the myrrh to be separated, —(2.) Rose-water should be distilled from the flowers for medicinal use; if prepared from the otto with magnesia, as a perfume, the magnesia and otto should be rubbed together before filtration.—(3.) Either.

"Spermaceti."—If sperm oil be bagged in warm weather, it will be liable to *deposit* spermaceti when exposed to cold.

"Tyro, A.P.S."—A book is kept at the house of the Pharmaceutical Society, for entering the names of Associates requiring Situations, or Members requiring Assistants.

R. T.—*Lindley's School Botany.* See vol. iv., p. 529.

"A Member" (Sheffield).—That department is managed by the publisher under general instructions.

"Chimicus."—It will be necessary to pass an examination; apply to the Secretary.

"An Associate" (Epsom).—It would depend on the terms of the agreement.

Advertisements to Mr. Churchill, Princes Street, Soho.

Instructions from Members and Associates, respecting the transmission of the Journal, to Mr. Smith, 17, Bloomsbury Square, before the 20th of the month.

Other Communications to The Editor, 338, Oxford Street, before the 20th of the month.

Mr. Schacht's communication will be inserted next month.

THE PHARMACEUTICAL JOURNAL.

VOL. VI.—No. VIII.—FEBRUARY 1st, 1847.

THE MEDICAL REGISTRATION BILL.

This is a revised edition of the Bill introduced by Mr. Wakley last session, and withdrawn on the 21st of August.

The objectionable passages which we noticed in our number for September (Vol. vi., No. iii.) have been, to a certain extent, rectified, and the Bill is in some other respects improved.

There is still, however, a tendency to merge all distinctions of rank in the one qualification conferred by registration under the Act.

Clause 9 provides, "That every person who shall be registered, and shall possess a certificate in form, according to the provisions of this Act, shall be entitled, without other licence than such registry and certificate, to practise medicine throughout that part of the United Kingdom in which his certificate was issued, and such person shall be deemed qualified to be appointed therein to any medical office in any public or other institution."

Suppose, for example, that a person is registered in due form under this Act as an Apothecary, "*such person shall be deemed qualified to be appointed*" "*to any medical office in any public or other institution*," *ergo*, he might be appointed as a Hospital Physician or Surgeon.

In the same manner, a person registered under the Act as a Surgeon, might take office as an Apothecary.

Graduates of the Scotch and Irish Universities might practise in London without a licence from either of the Colleges or the Hall. The lowest and most easily acquired qualification, obtained in any part of the United Kingdom, would, by means of the proposed registration, supersede the several degrees and licences now in force, which latter would become merely nominal or honorary distinctions, like the titles, F.R.S., F.L.S., and M.R.I.

The clause in question clearly admits of the above construction, but we think this must be an oversight, and it might be rectified by defining the medical office to which the party is eligible to be in accordance with his qualification as described in the register.

Although only one register is provided for Physicians, Surgeons, and General Practitioners, the qualification of each Practitioner is clearly described, with the date, in schedule A.; but in schedule C, which contains the form of certificate, no distinction is made. The term FACULTY OF MEDICINE, which had been objected to, is expunged; but the certificate states that A. B.

"Has been duly registered according to the provisions of the said Act, as a person who is qualified to practise Medicine in any part of England and Wales, and that he is entitled to exercise all the powers and privileges conferred by the said Act."

This certificate gives no information respecting the nature of the qualification, placing the Physician or Surgeon who graduates at the age of twenty-six, after a protracted and expensive education, on a level with the Apothecary, who is licenced to practise at the age of twenty-two.

It is not likely that the colleges would allow such a provision to pass without opposition; we therefore repeat our conviction, that the form of certificate must be made to correspond with the description of the qualification in the register.

Unless this alteration be made, and unless a proper distinction of rank be observed, we feel persuaded that it would be impossible for the Bill to pass; and we hope Mr. Wakley will reconsider the subject, as it would be impolitic to sacrifice the Bill for want of a judicious exercise of worldly wisdom in this respect.

The 12th clause provides for the repeal of the enactment (in the Act of 1815) requiring a five years' apprenticeship to an Apothecary. Experience has shown that this enactment is attended with great inconvenience, and, in many cases, injustice. Its repeal is therefore much to be desired.

The avowed object of the Bill, namely, the REGISTRATION of all qualified Medical Practitioners, is in accordance with the interests of the profession at large, and with the opinions expressed at various times by those who may be considered the representatives of the several bodies. Although it may not realise the utopian wishes of the most sanguine medical reformers, it is calculated to rectify many existing abuses, and to place all qualified practitioners within a "ring fence."

This we contend is the primary and legitimate object of Medical Reform—to unite the forces of the whole profession under one banner for the general protection, without interfering with vested interests and established rights, in a manner which would inevitably create a division in the Camp. A contest between the several classes in the profession resembles a civil war in which neighbours are cutting each other's throats; but the union of all classes in resisting invasion is a natural and laudable undertaking, which, if temperately and judiciously conducted cannot fail to result in a successful defence.

Unfortunately, the profession has hitherto been too much divided, and, consequently, a measure introduced by a supporter of one party is likely to be viewed with distrust by others. We have endeavoured in the present case to consider impartially the Bill itself on its own merits, and we hope the profession generally will do the same. We are looking forward to the result with considerable interest, as the course adopted by our body during the present Session of Parliament will probably be in some degree influenced by the reception which the Medical Registration Bill meets with in the House.

THE APOTHECARIES' ACT OF 1815.

NOTWITHSTANDING our desire to advocate the protection of qualified practitioners in every branch of the profession, we cannot assent to the justice or the policy of the proclamation recently issued by the Society of Apothecaries, and quoted in our last number.

After a period of incubation of thirty-one years, the Act has brought forth a progeny which, if nurtured to maturity, would bring destruction upon its parent.

Even on the supposition that the words of the Act admit of the construction recently discovered, and that the powers claimed are not barred by any Statute of Limitation, we doubt whether the exercise of such powers would be considered in a court of law just and constitutional.

Against whom is the proclamation directed? Is it against the nest of impostors who frequent the markets or distribute handbills in the streets? Is it against uneducated midwives, bonesetters, herbalists, corn-doctors, and other quacks? This is not likely, for the Act applies only to those who practise *as Apothecaries*, a title not assumed by the parties in question. The Act also contains a clause exempting Chemists and Druggists, which clause, although somewhat obscure, has hitherto answered the purpose for which it was introduced.

The parties to whom the penal clauses of the Act unquestionably apply, are medical practitioners not possessing the licence of the Hall, and found guilty of furnishing medicine to their patients. Many, if not most of the prosecutions hitherto instituted by the Company have been against such persons. The most recent case was that of a Physician whose qualification as a medical practitioner was not called in question, but who administered medicine without possessing the licence.*

The Editor of the *Lancet* (Oct. 30, 1841) observes,—

> "Men of rank and medical education were prosecuted by the Company, while the uneducated pretender revelled in success and luxury."

An Act of Parliament thus administered loses the character which it ought to enjoy, and instead of being an Act for protecting qualified practitioners, becomes a means of supporting a monopoly.

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* See *Medical Gazette*, Vol. xxxviii., p. 162, *Lancet*, *&c.*

If this principle is to be carried out with the *improved* mode of prosecution, we may expect to see medical practitioners sent to prison and incarcerated with thieves and felons; and as we are told that these prosecutions may be instituted by individuals, as well as by the Company, any Apothecary wishing to get rid of a rival practitioner, not a licentiate of the Hall, need only detect him furnishing a dose of medicine on an emergency, and indict him for the "misdemeanour!"

A few prosecutions of this description, would bring the Act of 1815 into such disrepute, that its repeal would be inevitable.

EXCISE PENALTIES.

CAUTION TO CHEMISTS IN SCOTLAND.

A SHORT time ago, a Chemist in Scotland forwarded to a customer in England a few small bottles of essences. The goods were seized by the Excise officers on the road, and he was called upon to pay a penalty of £200 for exporting spirit from Scotland to England without paying the additional duty. On the representation being made to him, he became sensible of the error which he had thoughtlessly committed, and appealed to the Board, praying for a mitigation of the penalty, on the ground that he had not intentionally defrauded the revenue. After some correspondence, and an interview with the Board, he was fortunate enough to obtain a mitigation of the penalty to £10, and a forfeiture of the goods.

Having heard the case from the party concerned, we requested permission to publish the facts, as a caution to other Chemists. In transmitting spirits, whether simple, perfumed, or medicated, from Scotland to England, it is absolutely necessary to make application to the Excise-office in the neighbourhood, to pay the additional duty, and obtain a permit. The rule applies not only to spirits sent in bulk, but also to proprietary articles put up in small bottles. However obvious this may appear when pointed out, it possibly might not occur to some Chemists, that a few four-ounce bottles would come under the cognizance of the Excise, and from misadventure, as in the above case, a penalty might be incurred. It is also necessary to observe, that when a permit is obtained, the goods must be sent by sea through the port specified by the Excise at the time, otherwise they will be liable to be seized on the road as if no permit had been obtained.

The duty on exporting medicated spirits from Scotland to England, is 4*s*. 2*d*. per gallon, on stronger spirits (such as lavender water) 6*s*. 3*d*.

TRANSACTIONS
OF
THE PHARMACEUTICAL SOCIETY.

PHARMACEUTICAL MEETING,
WEDNESDAY, JANUARY 13th, 1846.

MR. MORSON, VICE-PRESIDENT, IN THE CHAIR.

DISTRIBUTION OF PRIZES IN THE CLASS OF ORGANIC CHEMISTRY.

THE CHAIRMAN proceeded, as the first business of the evening, to present the prizes which had been awarded to the successful competitors in the class of Organic Chemistry, by Professor Fownes, as follows:—

LECTURE PUPIL.

Prize . . .	Mr. JOHN C. MAJOR, 88, Snow Hill.

LABORATORY PUPILS.

Prize . . .	Mr. W. H. BELL, Richmond.
Certificate of Merit	Mr. R. D. Grindley, Chester.

The prizes consisted of

LINDLEY'S *Vegetable Kingdom*. Second edition, handsomely bound. And

FRESENIUS'S *Qualitative and Quantitative Analysis;* and WILL'S *Outlines of Chemical Analysis*. Bound in one volume.

The following communication was read:—

ON THE ACTION OF A MIXTURE OF NITRIC AND SULPHURIC ACIDS ON SUGAR.*

BY MR. LEWIS THOMPSON.

HAVING an opportunity of sending a small parcel to England, I beg to inclose a sample of a substance which may interest you,—the only use to which I have yet applied it, is in the construction of rockets and fusees. It is prepared as follows:—Having mixed together three parts of strong sulphuric acid and one part of strong nitric acid, place the whole in a freezing mixture for some minutes, then add slowly one part of finely powdered sugar, and mix the whole with a glass rod—in three or four minutes the sugar will become pasty, and is then to be removed and thrown into a large quantity of cold water. After the excess of acid is removed it must be kneaded in warm water (from 90° to 100°); it then assumes the appearance of that in paper B. It must next be boiled for several minutes in a strong solution of carbonate of soda or potash, after which it may be carefully dried and fused at a heat not exceeding 235° F.; or it may be dissolved in alcohol, and the solution evaporated to dryness, when it exists as in paper A.

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* See Professor Brande's Lecture, page 388.—ED.

Although made from sugar, it is, I believe, the bitterest substance in nature. Five grains of that marked B. placed for twelve hours in eighty gallons of water, rendered the whole intensely bitter, yet it had lost no appreciable weight.

When anhydrous, as A., it is very inflammable, and once lighted is difficult to extinguish: it bears some resemblance to the alkaloids, and possesses all the characters of resin, except in not combining with alkalies. It might perhaps be useful in medicine.

17, *Rue des Plantes, près la Place de Cologne, Bruxelles,*
Dec. 8*th*, 1846.

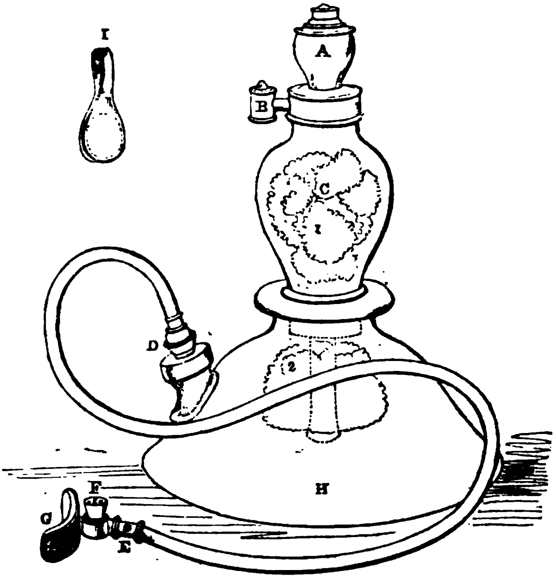
To PROFESSOR GRAHAM, F.R.S., &c. &c.

THE CHAIRMAN stated that this communication had been addressed to Professor Graham, who, in consequence of the last sentence in it, thought it might be suitably laid before the Members of the PHARMACEUTICAL SOCIETY. The subject was a very interesting one, and well worthy of further investigation.

ON THE INHALATION OF THE VAPOUR OF ETHER, AND THE APPARATUS USED FOR THE PURPOSE.

BY MR. SQUIRE.

THIS is now the all-engrossing subject, and the public attention is daily called to the several operations which have been performed without the accompaniment of the severe pain heretofore experienced. Some failures are also recorded, without stating the particulars as to their cause. For instance, the temporary apparatus, which I put hastily together for Mr. Liston, when he performed the first capital operation in this country, without a *sign even* of pain, was afterwards much improved and employed in subsequent operations, two of which are reported in one of the medical prints to have entirely failed; but no allusion is made to the cause of failure. Now, I think it would be useful to the profession to have, in each case of success or failure, the circumstances also reported. In the two failures alluded to, the noses of the patients were not held: practice, however, teaches us that this is necessary, and I find, on enquiry, that this precaution was taken with the first capital operation. After the complete success just mentioned, we cannot be surprised at the extraction of teeth, and minor operations of Surgery, being performed without pain. It remains, therefore, to collect the various causes of non-success from parties who have the opportunity of frequently witnessing the inhalation of ether and its effects, in order to render this boon most useful to suffering humanity, by instructing those who will hereafter have to employ it.



A. The Urn with its stopper, into which the ether is poured.
B. Valve which admits the air.
C. Contains sponge saturated with ether.
D. Valve which opens at each inspiration, and closes at each expiration.
E. Ferule for regulating the quantity of atmospheric air admitted.
F. Valve for the escape of expired air.
G. Mouth-piece.
H. Lower vase.
I. Spring for closing the nose.'

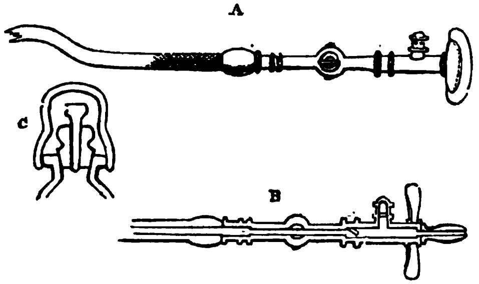
I am informed that the patients differ much in the amount of courage they exhibit, in the anticipation of an operation, and this, of course, will vary with the magnitude and danger of such operations. They, therefore, require encouragement as well as a good deal of tuition in inhaling the vapour of ether from a tube; and it has been remarked that in various stages of the process of inhalation, they have desisted, and even when close upon the point of insensibility, have stopped short, refusing to inhale further. These circumstances will militate against its uniform success, let the apparatus employed be ever so perfect, and until the process becomes more familiar, and the public are satisfied that no unpleasant effects are produced by it on patients of all ages, the confidence of the public will not be entirely secured, and we shall have occasional failures from the causes I have mentioned. Persons in health desirous of trying its effect for pleasure, are affected in one minute to the full extent, and in the cases I have witnessed, the different dreams induced are very amusing; they, however, all agree in not being able to reckon the time they have lost during the minute or two they were asleep.

I may mention the marked difference in the effects produced by the washed and unwashed ether in the same person on the same evening. On inhaling the washed ether, he felt pleasurable sensations, then taking the ordinary rectified ether, it produced unpleasant sensations, followed by a trembling, but on inhaling the washed ether again shortly afterwards, the pleasurable feelings returned.

In constructing the apparatus, I have taken into account the weight of the vapour of ether, and have placed the inhaling tube near to the bottom part; considering also its stimulating effects on the air passages, causing coughing, I have a means of regulating the supply of air, to dilute it at the commencement of inhalation, and of increasing the strength as the patient is able to bear it to the full force. This is done by means of a ferule near the mouth-piece, which, when open, allows free access of air, and may be either partially or entirely closed with perfect facility, according to the condition of the patient. To secure an ample supply, I have the upper vessel filled with sponge, also a collar of sponge around the descending tube at the bottom of the lower vessel, which imbibes any liquid ether in excess, and also serves further to impregnate the air in its passage to the inhaling tube. The apparatus is supplied with ether at the top by a metal funnel, forming part of the cap; the ether falls through a rose, and is distributed in a shower upon the sponge: there is a patent valve in this part, which admits air at each inspiration, and closes instantly afterwards, effectually preventing the waste of the ether by evaporation. The inhaling tube is furnished with Read's valves (for the improvement of which he has lately taken out a patent), and which, by permission, are used in this apparatus. These are so arranged as to prevent the air expired from returning into the apparatus. The mouth-piece is made to fit and entirely to enclose the mouth, it having been found impossible to regulate the access of air by the tube mouth-piece. This then is a description of the apparatus in its present state, and I trust it will serve efficiently the very useful purpose its original was so successful in.

277, *Oxford Street.*

Mr. **Hooper** proceeded to explain the apparatus which he fitted up for the administration of the vapour of ether. This form of apparatus had been first suggested to him by Dr. Boot and Mr. Robinson, by whose permission he had undertaken its construction. It had since been modified and improved, and he could now submit it to the meeting as an instrument capable of insuring the full effects of the inhalation of the vapour of ether. He might state that the instrument had been used in a great many cases, and had never yet failed to produce the desired effect.



The general form of the apparatus resembles that contrived by Mr. Squire. Instead of the brass fittings at the top, Mr. Hooper has a double stopper, (*C*) over which a glass cap is applied when the instrument is not in use. By removing the inner stopper, a small supply of air is admitted, which may be increased by elevating or removing the larger stopper. This should be done when the patient has become accustomed to the stimulus, and when the full effect is desired; afterwards the access of air may be regulated according to the condition of the patient. Mr. Hooper stated that he had introduced an improved kind of valve in the tube, and also a more effectual mouth-piece, which being elastic and covered with a pad, would adjust itself closely to the mouth. (*A*, the tube, with valves and mouth-piece. *B*, section). He enumerated a number of cases in which he had used this instrument at the hospitals with success, and had much confidence in the efficacy of his mouth-piece.* Mr. Hooper considered it important not to admit free atmospheric air under any circumstances, but to introduce all the air which might be found requisite mixed with the vapour of ether.

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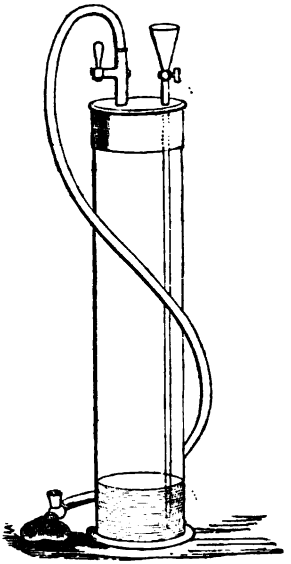
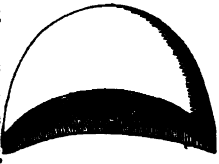
* Some discussion arose about priority of invention, caveats, patents, registration, &c. which the Chairman very properly cut short, as being foreign to the objects of the meeting.

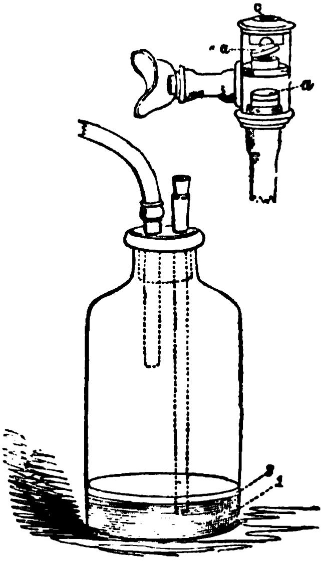


Mr. J. C. **Clendon** exhibited an apparatus which had been fitted up for him by Mr. Clarke, of the Strand. This apparatus consists of a tall cylindrical jar with brass fittings at the top, through which a glass tube passes to nearly the bottom, and dips into a few ounces of ether; another tube passes out from the top, having the usual valves and mouthpiece. Mr. Clendon differed from Mr. Squire in thinking that the flexible tube should communicate with the lower part of the vessel. Notwithstanding the density of the vapour of ether, he found that it very readily diffused itself with the atmosphere, and that by means of his apparatus, the full effect could be produced. It was not to be expected that any apparatus would answer in all cases, some persons being much more easily affected than others, and a variety of circumstances might interfere with the result. He thought it desirable to use due precautions in the administration of the vapour of ether, and considered that a medical man should always be present. If any misfortune should occur producing a fatal result, much injury would be done to the public at large, as the process, which, if cautiously applied, might be essentially useful, would be brought into disrepute, and patients would be afraid to try it. By proper precautions, this might be avoided, and experience would lead to improvements in the administration of this valuable remedy.



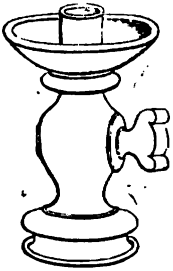
Mr. **Waugh** thought that the effect produced by inhaling the vapour of ether depended much on the adoption of an efficient mouth-piece, by which the vapour may be freely inhaled and unmixed atmospheric air excluded. He had adapted an inhaling tube, furnished with what he considered to be the most efficient kind of mouth-piece, to a common inhaler, and thought this would answer as well as the most complicated form of apparatus. The mouth-piece which he used, and which he observed had been adopted by some others, was originally invented by Dr. Harwood, of St. Leonard's, to whom he was anxious to do justice, by giving him credit for the invention.

Mr. JACOB BELL observed, that most of the instruments hitherto recommended had been constructed with the view of making the most perfect apparatus without reference to expense. He thought it was also desirable to contrive a means of attaining the result as economically as possible. He had therefore constructed an apparatus with a common green quart bottle, having a bung with two orifices, through one of which a glass tube passed nearly to the bottom of the bottle, while in the other, one of Reid's flexible inhaler tubes was fitted. As a substitute for the latter, Mr. Gilbertson had contrived a tube having a new kind of valve made of glass. To this Mr. Bell proposed to add a glass mouth-piece, similar in form to an eye-glass, but rather larger. Some persons might object to apply to their mouths a pad or wooden tube saturated with moisture from the patient who used it last. The glass mouth-piece could be removed and washed as easily as a cup or wine-glass. Instead of a sponge, a little water (1) was introduced into the bottle with the ether, (2) through which the bubbles of air passed from the lower end of the glass tube, thus becoming saturated with the vapour. This apparatus could easily be put together by a surgeon in the country who could not command the facilities of a London hospital: the only part not likely to be had at hand was the tube with the valves, which could be obtained at a moderate cost. The valves *a* and *a** are two disks of glass, each resting on a short piece of tube, and the whole is contained in a larger tube, the opening to the mouth-piece being mid-way between the two valves. On inspiring, the lower valve opens, and the upper one closes; on expiring, *vice versa;* the expired air passes out through an orifice *c*. The tubes being glass, the action of the valves may be seen, and the trifling resistance occasioned by their weight, may, if requisite, be diminished, by inclining the tube. Mr. Bell thought the failure of the process in some cases should not always be attributed to the apparatus. A fiddle ought not to be condemned because



some persons are unable to play it. Skill and practice are equally requisite in inhaling ether. Persons sometimes inhale it as if they were smoking a segar, filling their mouths, but allowing little, if any, to pass into the lungs. In order to produce the full effect the vapour should be allowed freely to pass into the lungs, and each inspiration and expiration should be complete. Any inhaler would answer if provided with a tube of sufficient dimensions, with the proper valves and a means of admitting a due proportion of air. Dr. Boot had observed, that when the vapour of ether is too much diluted, it produces excitement instead of a sedative effect.*

Mr. **Pedler** had fitted up a common bladder with a mouth-piece and stop-cock, conceiving that simplicity was a great desideratum in the construction of an apparatus for the purpose in question. The bladder is used by partly inflating it with air, then introducing a small quantity of ether, and allowing this to diffuse itself through the air until the bladder becomes fully distended. The etherized air is then inhaled and again expired into the bladder, continuing the process until the desired effect is produced.



Mr. **Stokes** had employed a bladder to which an ivory mouth-piece and stop-cock were fitted; he found this method of administering the vapour, to answer perfectly well. The mouth-piece was made with a very large bore, so as to admit of an easy and full inspiration being made.

Mr. **Waite** had also used a bladder and ivory mouth-piece. He thought this the best adapted for the use of the Dentist,

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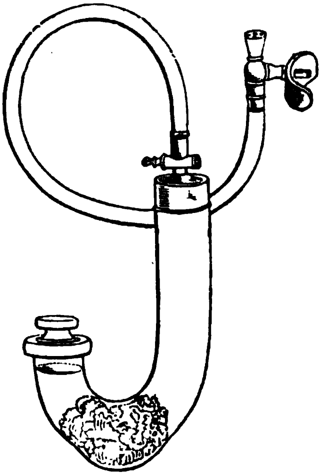
* In some recent experiments in inhaling ether, it was found to affect some persons much more powerfully than others, and in three cases it produced great excitement. One of the parties having been quiescent for about a minute, suddenly sprung forward, jumped over three chairs, and seized one of the bystanders with great violence. Six men could scarcely hold him, and it was with great difficulty that he was secured. This condition lasted nearly forty minutes, and occasioned no little alarm. After it had subsided, he had no recollection of what had occurred, but discovered several severe bruises which he had inflicted on himself during the struggle, by collision against the furniture. Another of the party, when under the influence of ether, was seized with a convulsive fit of laughter, which continued without any consciousness for several minutes. A third was in a state of boisterous and unconscious excitement for above half an hour. Others became insensible and perfectly quiescent: in these cases the effect subsided more speedily than it did in the former.

From these experiments as well as others which we witnessed some years ago, it appears that the effect of the vapour of ether is precisely analogous to intoxication, affecting persons differently according to their temperament, constitution, or the quantity taken. It is also liable to the same abuse as on account of its simplicity. He must say, however, that he considered the indiscriminate administration of the vapour of ether by Dentists, many of whom possessed no medical knowledge, as being quite unjustifiable in the present state of our experience as to its effects on different persons. He had been glad to hear the remark made to this effect by Mr. Clendon, as he fully coincided with it.



Mr. Tracy of St. Bartholomew's Hospital, said he had administered the vapour of ether in seventy or eighty cases, for producing insensibility during the extraction of teeth, and had used nearly all the different kinds of apparatus which had been hitherto made for the purpose, and which were kindly supplied to him by Mr. Ferguson, of Smithfield, instrument-maker to the hospital. He could bear testimony to the general efficacy of all these instruments when properly used, and to the almost uniform effect of the vapour in producing insensibility. He believed that where failures occurred, it was from the vapour having been imperfectly inhaled. He considered that the size of most of the instruments was an objection; it was desirable in using the instrument, especially in the extraction of teeth, that the operator should be able to administer the vapour without the aid of assistants; and that when the desired effect was produced, he could easily dispose of the apparatus, while at the same time he gave his attention to the patient. In this respect, there was an advantage in the bladder, which might be thrown on to the ground without being injured. It was also, he thought, desirable to study simplicity in the construction, and economy in the price of the apparatus used. He had himself contrived an apparatus, which he thought would be found to comprise the requisite conditions. Hookahs appearing to be the fashionable shape, Mr. Tracy had adopted the

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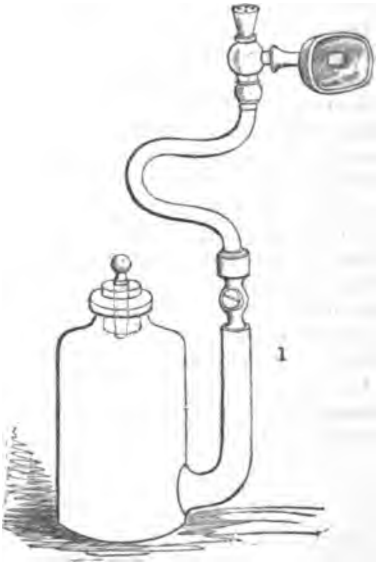
ardent spirits; and the propensity, when once acquired, is equally dangerous.

Chloric ether has been tried in some cases with success, it is more pleasant to the taste, but appears to be rather less powerful in its effects than sulphuric ether.—Ed.

form of the German pipe. The pipe is of glass, and mounted at the top with a brass cap and stop-cock, into which an elastic tube is screwed of sixteen inches in length, which is surmounted by a double valve mouth-piece of the kind in ordinary use. A steel compress padded, is used for securing the nostrils. As much ether is to be poured into the pipe, as will fill the well and saturate the sponges: the mouth-piece is then to be placed between the patient's teeth, the stopper removed, the stop-cock turned on, and the patient directed to inhale in a natural way.

Mr. FERGUSON, of Smithfield, exhibited three forms of apparatus. The first (1) is that suggested by Mr. Alfred Smee, consisting of a bottle with a double stopper, similar to that used by Mr. Hooper (figured page 353). The bottle being filled with sponge wetted with ether, the vapour passes through a tube at the bottom, furnished with the flexible tube and mouth-piece. The second (2) is sufficiently intelligible from the figure annexed without further description. It may either be used with sponge, or sufficient ether may be put into the bottom of the vessel so as to cover the lower end of the tube. The third, in its general form and principle, resembles Mr. Squire's apparatus.



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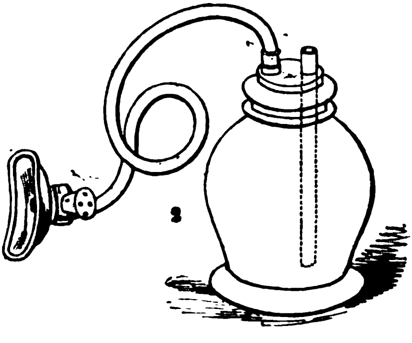

2

Mr. Sainsbury adverted to the importance of making the inhaling tube sufficiently large, observing that some of the specimens on the table were defective in this respect. The diameter of the human trachea should be taken as a criterion of the size required.

The Chairman observed, in answer to an inquiry, that alcohol is sometimes present in ether, and that in this case it should be separated by washing; but that pure ether does not require it.

Mr. Hooper remarked, that in case of any acid being present, lime-water would be the best remedy.

A question having arisen respecting the possibility of inhaling the pure vapour of ether,

Dr. Andrew Ure stated that the pure vapour of ether was a non-respirable gas, that like carbonic acid gas, it could not be admitted into the lungs without admixture with atmospheric air, as the spasmodic closure of the glottis would exclude it.* Dr. Ure suggested instead of a mouth-piece, a hood to enclose the head, and having a glass window in front, as the labour of "wire-drawing" the air and vapour through a small tube was likely to interfere with the result.

The Chairman, in dissolving the meeting, observed that each form of apparatus exhibited had appeared to answer the purpose for which it was intended; that the most simple apparatus, if effective, would eventually be found the most useful, and that time and experience only could demonstrate, amongst the many varieties, which form of instrument was likely to be most generally adopted.

[* Subsequent experiments appear to show that it is possible to inhale the pure vapour of ether. It is desirable that some further investigation should be made on this subject. In the experiments hitherto reported, no provision has been made for determining the relative proportion of ethereal vapour and atmospheric air inspired, this having been regulated at random, according to the apparent effect on the patient. It is generally admitted that the vapour, when much diluted, is stimulating and exciting, and that its sedative effect is in proportion to its concentration. It remains to be determined, by a series of accurate experiments, to what extent the concentration ought to be carried in order to produce most speedily and effectually the desired result. Some of our readers may probably be interested in Dr. Snow's table of the densities of ethereal vapour at different temperatures, quoted at page 361.—Ed.]

LIST OF MEMBERS,
ASSOCIATES AND APPRENTICES (*continued*).

MEMBERS.

Elected December and January.

Birkenhead	*Dutton, John
Birmingham	Marshall, Richard
Bolton	Simpson, James
Bristol	Watson, Edward Morgan
Chipping Sodbury	Wheeler, John
Dedham	Downing, Joseph G.
Fleetwood	Allright, Henry
Fordingbridge	Haydon, Frederick W.
Huntingdon	Bryant, William
London	Corfield, Daniel
	Harris, John E.
	Lindo, Benjamin
	Rowntree, John
	Smith, William F.
Otley	*Atkinson, John T.
Worcester	Stringer, John
	Whitfield, John

MAJOR EXAMINATION.

Bell, William Henderson	Richmond
Grindley, Robert Dutton	Chester

REGISTERED APPRENTICES.

APPRENTICES.	RESIDING WITH	TOWN.
Beavan, James	Mr. Binstead	Hereford
Clarkson, James	Mr. Reinhardt	Hull
Collins, Thomas	Mr. Collins	Lincoln
Owen, Thomas R.	Mr. Mease	North Shields
Weston, Thomas	Mr. Spurgin	Chipping Ongar

ORIGINAL AND EXTRACTED ARTICLES.

TIC DOULOUREUX CURED BY ETHER.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

Sir,—In the course of conversation on the effects of the inhalation of the vapour of ether, a lady made a statement, which I think you will agree with me is quite worth repeating through the medium of your journal. She says, that about twenty-two or three years since, she suffered severely for many months from tic douloureux, and having received little or no relief from various kinds of medical treatment, was ultimately advised by a Dentist, living in Ipswich, to *apply* ether and laudanum mixed, externally, and at the same time to *inhale the vapour*, taking care to be on her bed when using it. The immediate effect was always sleep, on awaking from which she found herself free from pain. She does not remember exactly how long she made use of the remedy; but says she was soon cured entirely, and has never had another attack.

I am, Sir, yours, &c.,

HENRY COLLEN.

TABLE OF THE QUANTITY OF THE VAPOUR OF ETHER IN ONE HUNDRED CUBIC INCHES OF AIR,

Saturated with it at various temperatures.

BY JOHN SNOW, M.D.

Temp. Fahr.	CUBIC INCHES.		WEIGHT IN GRS.		Temp. Fahr.	CUBIC INCHES.		WEIGHT IN GRS.	
	Ether.	Air.	Ether.	Air.		Ether.	Air.	Ether.	Air.
40°	24.3	75.7	19.1	23.1	66°	45.3	54.7	35.7	16.6
42	25.6	74.4	20.1	22.7	68	47.4	52.6	37.3	16.0
44	27.0	73.0	21.2	22.2	70	49.4	50.6	38.9	15.4
46	28.3	71.7	22.3	21.8	72	51.5	48.5	40.6	14.7
48	29.7	70.3	23.4	21.4	74	53.6	46.4	42.2	14.1
50	31.2	68.8	24.6	20.9	76	56.0	44.0	44.1	13.4
52	32.7	67.3	25.8	20.5	78	58.4	41.6	46.0	12.6
54	34.3	65.7	27.0	20.0	80	61.0	39.0	48.1	12.0
56	36.0	64.0	28.3	19.5	82	63.7	36.3	50.2	11.0
58	37.7	62.3	29.7	19.0	84	66.6	33.4	52.5	10.1
60	39.5	60.5	31.1	18.4	86	69.5	30.5	54.8	9.3
62	41.4	58.6	32.6	17.8	88	72.5	27.5	57.1	8.3
64	43.3	56.7	34.1	17.3	90	75.6	24.4	59.6	7.4

At about 45° the weights of vapour of ether and of air are equal, and at a little above 70° the volumes are equal.

The weights are calculated with the barometer at thirty.

[The mixture of the vapour of ether with atmospheric air being highly explosive, surgical operations ought never to be performed under its influence by candlelight. The result of an explosion under such circumstances would be dreadful.—ED.]

ON ALCORNOQUE BARK.

BY JONATHAN PEREIRA, M.D., F.R.S.

Several months since, this bark was prescribed by a physician for a patient suffering from phthisis, and none of it being obtainable in the London market, application was made to a Pharmacien in Paris, who furnished a supply of it, a portion of which is in my possession.

I have recently received from a correspondent in Spain, a sample of bark under the same name, but differing in character from the former.

These barks, both of which bear the name of *Alcornoque*, are the produce, the latter one of the south of Europe, the former of America. I propose, therefore, to distinguish them respectively by the names of *European* and *American Alcornoque*.

Alcornoque is a Spanish word signifying the *cork oak* (Quercus Suber, *Linn*). In the *Diccionario de la Lengua Castellana, compuesto por la Real Academia Española*, published at Madrid (1726-39), it is stated that "According to Don Sebastian de Covarrubias, the word *alcornoque* is of Arabic origin, being derived from the Arabic word *dorque*, which signifies denuded or badly clothed, adding the article *al*, changing *d* into *c*, and introducing the syllable *no* into the middle of the word. But the alteration or corruption required for this etymology is so great that there is some ground for supposing that the word is derived from the Latin *quercus*, signifying the oak; bearing in mind, also, that the tree is a species of quercus."

1. European Alcornoque Bark; *Cork-tree Bark; Bark of the Cork Oak* (*Quercus Suber*)*; Spanish Alcornoque Bark; Italian Alcornoque Bark.*—This is the original and true alcornoque bark, though not the bark referred to by French and German pharmacologists under this name.

It is the bark known in Spain as alcornoque bark, and sold as such by Spanish pharmacologists. Of this I have assured myself by sending to Spain for it. My correspondent applied for alcornoque bark to a Spanish Druggist, who sold him as such the bark of Quercus Suber. "I have obtained," writes my correspondent, "half-a-pound of alcornoque bark (*i. e.* cork-tree bark) from a Spanish Druggist. The cost is 12 reals (4*d.*) per lb." Moreover, Mr. Tingle, of Apothecaries' Hall, was informed by the celebrated Spanish botanist, Lagasca, that the alcornoque bark of Spain was the bark of the Quercus Suber.

According to Merat and De Lens*, Italian alcornoque bark is the bark of Quercus Suber.

The bark of the cork oak, has been sold in London as alcornoque bark. Some years ago the Apothecaries' Company being in want of alcornoque bark, sent an order for some to an herbalist, who, in a day or two, supplied it. Shortly afterwards it was discovered that the herbalist had begged some of the bark of the younger branches of the cork oak growing in the Company's garden at Chelsea, and sold to the Company their own cork-tree bark as alcornoque bark!

Merat and De Lens state that the erroneous opinion of Virey, that American alcornoque is the bark of the Quercus Suber, has given rise to a commercial fraud, practised by the English, of selling the bark of the young branches of the cork oak, gathered in Italy, as alcornoque bark.

European alcornoque bark is used by tanners. It is generally known in this country by the name of *cork-tree bark*, and is imported chiefly into Ireland, or for shipment to Ireland, to a considerable extent;—perhaps to the amount of 1,000 or 1,500 tons annually. It is brought from Italy and Spain; though of late it has been scarce in the latter country, and the deficiency has been supplied from Barbary. The Italian bark is inferior to the Spanish or Barbary kind. I am informed that the present prices in the London market, which, however, are nearly nominal, oak bark and velonia being at present both cheap and plentiful, are as follows:—

Spanish Cork-tree bark, per ton............	7*l.* 10*s.*	to 8*l.*
Leghorn ditto, per ton	6*l.*	to 7*l.*

The cork-tree bark which I received from Spain, under the name of alcornoque, bears considerable resemblance to oak bark (*Quercus pedunculata*). It is ash-grey externally; and on its internal surface, is grooved or wrinkled.

I am unacquainted with any chemical analysis of this bark, but its constituents appear to be very similar to those of oak bark. It is less astringent, however, than the latter.

The elastic substance called cork, was analysed by Chevreul (*Ann. de Chemie*, xcvi., 155).

In its medical properties, European alcornoque bark agrees with oak bark, and may be employed in the same cases. (For some notices of the medicinal uses of cork, see Chomel, *Histoire des Plantes usuelles*; and Murray *App. Medicaminum.*)

2. AMERICAN ALCORNOQUE BARK. *Genuine alcornoque bark* of French and German pharmacologists. This is the bark usually intended when alcornoque is prescribed. It is best, how-

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* *Dictionnaire de Matière Médicale*, t. i. p. 158.

ever, to designate it as American alcornoque, to distinguish it from cork-tree bark.

The application of the Spanish word *Alcornoque*, to an American plant, was doubtless first made in a Spanish colony, and must have arisen from some real or fancied resemblance between the American plant and the European alcornoque. Every one is familiar with the custom of Colonists to name the towns, animals, plants, &c. of the colony after those of their mother country.

According to Poudenx *, American alcornoque bark was first exported in 1804, by Don Joaquim Jove, a Spanish merchant, at Guayra.

The earliest notice of it which I have met with, is contained in vol. xxv. of the *Medical and Physical Journal*, No. 148, for June, 1811. It is as follows:—

> "An article in a late Martinico gazette, describes the effects of a tree growing on the coasts of that island, under the name of the divine *alconorque*. It is said to be a specific in diseases of the viscera, especially of the liver and lungs. An infusion of the outer bark, is the way in which it is used. A glass of this infusion is taken night and morning, with two spoonfuls of honey. Milk, acids, spices, and all irritating substances, are to be avoided during its use. A cataplasm of it is used for pains in the region of the liver. This account of the virtues of the divine *alconorque*, is said to be derived from the Indians. What is the divine *alconorque*, and who are the Indians of Martinique?"

In the month of July of the same year (1811,) Virey † published a notice of Alcornoque bark, which he stated had been sent some time previously for the examination of the medical department of the French army. This is the earliest notice of it which I have met with in the French journals.

It does not appear to have become known to the Germans until 1814,‡ when an article on it, taken from *la Gazette de la Martinique*, appeared in the *Salzburger medicinisch-chirurgischen Zeitung*, Nro. 72, p. 316.

Great uncertainty exists as to the species, and even natural order of plants from which this bark is obtained. It has been variously ascribed by different authors to *cupuliferæ*, *euphorbiaceæ*, *apocynaceæ*, *guttiferæ*, *leguminosæ*, and *malpighiaceæ*.

1. *Cupuliferæ*.—Virey § ascribed it to *Quercus Suber*, Linn. But though this species yields the European alcornoque bark, as I have already stated, it certainly does not produce the Ame-

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* *Bulletin de Pharmacie*, t. v., p. 257. 1813.

† *Bulletin de Pharmacie*, t. 3me. No. vii, Juillet 1811.

‡ Dierbach *die neusten Entdeckungen in der Materia Medica*, p. 278, 1828. Also, Rein in Gilbert's *Annalen d. Physik.* Neue Folge. 20 Bd. p. 121, 1815.

§ *Bulletin de Pharmacie*, t. ii, iv., v. 1811, 1812, and 1813.

rican alcornoque bark, whose physical characters are quite different to those of cork-tree bark.

2. *Euphorbiaceæ.*—The *Alchornea latifolia*, Sw. a native of the West Indies, is adopted by some writers as the source of Alcornoque bark, on no other ground, that I can ascertain, than that of some fancied resemblance between the words *alcornoque* and *alchornea.* But, as I have before stated, *alcornoque* is an ancient Spanish term, while *alchornea* is a comparatively modern botanical word, coined within the last century, and derived from the name of an English botanist (Mr. Alchorne). There is not, as far as I can find a shadow of pretence for referring alcornoque bark to this tree.

3. *Apocynaceæ.*—Another guess with respect to the origin of Alcornoque bark is that of Lemaire Lisancourt, who has suggested that it may be the produce of an apocynaceous plant allied to *Nerium anti-dysentericum.*

4. *Guttiferæ.* — M. Poudenx * states that the Alcornoque bark is the produce of a guttiferous tree, which constitutes a new genus between *Garcinia* and *Grangeria.* Unfortunately for his statement *Grangeria* belongs to *Rosaceæ.*

5. *Leguminosæ.* — Humboldt, Bonpland, and Kunth have stated, that the name of Alcornoque is given to the bark of a leguminous tree; viz., the *Bowdichia virgilioides.* And still more recently a French writer, L'Herminier †, has declared that Alcornoque bark is the produce of a leguminous tree, near the genus *Bauhinia.*

Bowdichia virgilioides, Kunth. The bark of this tree is called *Alcornoque* by the inhabitants of the district where it grows. The following translation of an extract from Humboldt, Bonpland and Kunth's *Nova Genera et Species Plantarum,* t. vi., p. 295, relates to this plant, and embraces all that we know on this point.

"Called by the inhabitants *Alcornoco.* Grows near Barbula, between New Valencia and Portocapello; in the Llanos of Barcelona, near Villa del Pao; and on the banks of the Oronoco, between Carichana and its confluence with the ocean. Height 30—150 feet. It yields flowers and fruit in May.

A tree, whose young branches are somewhat terete, ferruginous, downy, unarmed.

The inhabitants state that the tree, when prostrate, is easily converted into stone."

6. *Malpighiaceæ.*—To the barks of one or more species of malpighiaceæ, the name of *Alcornoque* appears to have been applied in South America.

In speaking of the Llanos of New Barcelona, Humboldt

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* *Bull. de Pharmacie,* t. v., p. 256.

† *Journal de Pharmacie,* xix., p. 379.

(*Personal Narrative*, vol. vi., part 1, p. 6) mentions "*rhopalas* (chaparro)" and appends the following foot-note to the word *rhopalas*:—

> "A neighbouring genus, Byrsonima coccalobæfolia, B. laurifolia, near Matagorda, and B. ropabæfolia. The European planters, who, from the feeblest analogies, believe that they find every where the plants of their own country in the vegetation of the tropics, call the malpighia, *alcornoque* (cork tree) no doubt on account of the *suberous* bark of the trunk. This bark contains tannin, and in another malpighia (Byrsonima Moureila) which is the febrifuge tree of Cayenne, the quinquina or cinchonia is supposed, not without reason, to exist, united with the tannin."

In the last edition of Geiger's *Pharmacie* (the botanical portions of which was edited by the late Professors Nees von Esenbech and Dierbach,) alcornoque bark is ascribed to *Byrsonima crassifolia* (Mulpighia crassifolia *Auct.*) It would appear, however, from Dr. Hancock's remarks, that B. crassifolia does not yield alcornoque bark; for in his observations on the fascination of serpents (Jameson's *Edinb. New Phil. Journal*, 1830, for June, p. 169), he observes—

> "I was informed at Angostura, that the bark of Chapara Mantua (Malpighia crassifolia) the bark of which is very thick and astringent, is among the best remedies as an antidote;" and he goes on to observe, that he was informed by M. Machon, that the remedy used to the southward of Orinoco, for the bite of the rattlesnake, "is the bark of the Chapara."* He also said, "that the bark of the Alcornoco is a good remedy."

Such then are the opinions which have been advanced respecting the botanical origin of the American alcornoque. It is obvious, however, that the whole subject is involved in complete obscurity.

American alcornoque bark occurs in large flat, occasionally somewhat arched pieces. It has a remote resemblance to coarse flat cinchona bark. The pieces are from four to ten inches long, from two to four inches broad, and from four to eight lines thick. The epidermis is usually wanting. Externally, the bark is reddish, or dark cinnamon brown. Internally, we observe a pale coloured liber. Taste, slightly bitter.

The following is Professor Th. Martius's description of genuine American Alcornoque bark:—

> "The bark of the stem and larger branches, flat or slightly arched, two or three lines thick. Epidermis absent. Externally reddish brown or dark cinnamon brown. On a transverse section we perceive three layers; internally we commonly find the liber (characters of the genuine bark). Its colour is paler, odour musty. Outer bark acerb, slightly bitter. Bark moderately bitter, colours the saliva yellow. The cold infusion does not redden litmus. For figures of the bark see Göbel's *Waarenkunde*, Bd. 1. Taf. 1, fig. 5, 6, 7, 8."

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* "He added, at the same time, that this bark, as well as that of the Alcornoco, is esteemed a *grand remedy* for abscesses on the lungs. They are both powerful astringents." (Note by Dr. Hancock.)

On submitting thin sections of the bark to microscopic examination I can discover no crystals; but some of the hexagonal cells are filled with a reddish substance (resin ?), and present an appearance somewhat similar to what I have observed in Cascarilla bark.

Professor Th. Martius describes two other kinds of alcornoque bark, one of which he calls *Jamaica alcornoque*, the other *false alcornoque*. These I am unacquainted with.

American alcornoque bark has been examined chemically by MM. Nachet and Cadet *, by Trommsdorff †, by Rein ‡, by Geiger §, and by Biltz ‖. The following are the results of the analyses of the two last-mentioned Chemists:—

COMPOSITION OF AMERICAN ALCORNOQUE.

GEIGER'S ANALYSIS.	
Reddish brown, tasteless resin......	4.11
Peculiar tannin	1.11
Tannin and bitter extractive	7.50
Extractive rendered insoluble......	0.44
Gummy extractive with lime salts..	1.56
Bitter, mucilaginous, gelatiniform matter (starch ?)	3.00
Woody fibre	75.78
Water and loss....................	6.50
	100.00

BILTZ'S ANALYSIS.	
Peculiar crystalline matter (alkornin)	1.15
Matter soluble in alcohol, not in ether (oxidized tannin ?)	1.67
Tannin with a lime salt............	14.27
Gummy extractive with starch, a nitrogenous substance, and a super salt of lime	33.74
Woody fibre and loss	47.71
Ashes of the woody fibre	1.46
	100.0

The peculiar crystalline substance, which has been termed *Alkornin*, was found by Biltz in the liber, in which it was detected, by the microscope, in the forms of small white crystals. It is neither acid nor basic, is soluble in alcohol, ether, and the fixed and volatile oils. It is volatile, and may be sublimed in a glass tube. More recently it has been examined by Frenzel ¶, who obtained 47 grains of pure alkornin from half a pound of bark. Biltz considered it to be intermediate between resin and wax, and Gmelin regards it as a fat.

Professor Theodor Martius **, has given a table showing the chemical reactions of several tests on genuine alcornoque, Jamaica alcornoque, and false alcornoque. A more extensive table has been recently published by Messrs. J. and E. Martiny ††.

Sulphuric acid renders the watery infusion somewhat clearer, tincture of galls produces a slight turbidness, sulphate of the sesquioxide of iron gives a brownish-green colour, nitrate of the protoxide of mercury yields a copious white precipitate, and the solution of isinglass a copious precipitate.

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* *Journal de Pharmacie*, t. i. p. 408. 1815.

† *Journal der Pharmacie*, Bd. xxv.

‡ Gilbert's *Annalen*, 1815. Also *Journal de Pharmacie*, t. ii., p. 333. 1816.

§ *Dissertatio de remediis quibusdam, &c. Heidelb.*, 1817. Also L. Gmelin *Handb. de Chem.*, Bd. ii., p. 1322.

‖ Brandes's *Archiv.* xii. Also L. Gmelin, *Op. cit.*, p. 1322.

¶ Brandes's *Archiv. der Pharm.* Bd. xxiii. Also, *Pharmaceutisches Central Blatt.* 1840. p. 552.

** *Pharmakognosie.*

†† *Encyklopädie der medicinisch-pharmaceutischen-Naturalien, und Rohrwaarenkunde.* Bd. i., s. 235,6, 1843.

From these experiments, it is obvious that American alcornoque contains tannic acid, and is, therefore, astringent. Richter (*Ausführliche Arzreimitellehre*, Bd. i. and vi.) calls it a mucilaginous bitter remedy; but its bitterness is certainly not very marked. Schwartze (*Pharmakologische Tabellen*), on the other hand, ranks it among astringents, and considers it to be allied to cinchona and Iceland moss in its medicinal properties. Poudenx declares, that besides being tonic and astringent, it possesses emetic properties.

American alcornoque was introduced to the notice of the profession about thirty-five years ago as a remedy for phthisis; and after a short trial on the continent it fell into almost total disuse. In this country it never appears to have been much employed; and to English medical practitioners and pharmaceutists of the present day, it is almost entirely unknown. Occasionally, however, it is anxiously sought after in the London shops by the friends of some phthisical invalid; and a demand for it is, in this way, now and then created.

Notwithstanding the reputation which, for a short period, it possessed, as a remedy for phthisis, there are no valid grounds for believing that it possesses any curative power whatever in this disease.

American alcornoque has been exhibited in the forms of *powder*, *cold infusion*, *decoction*, and *extract*.

In *powder* it has been given in doses from a scruple to forty-eight grains. Some writers recommend the separation of the internal bark or liber from the inert external part of the cortex. The powder is frequently given in mixture with sugar and cinnamon.

The *cold infusion* is prepared by digesting for two days, half an ounce of the bark, in eight ounces of cold distilled water. The dose is one or two fluid ounces.

The *decoction* is prepared by boiling half an ounce of the bark in sixteen ounces of water, down to eight ounces. The dose is one or two fluid ounces.

The dose of the *extract* is from ten to twenty grains.

ON THE LEMON GRASS, OR ANDROPOGON SCHŒNANTHUS,

Cultivated in most of the West Indian Islands.

BY WILLIAM HAMILTON, M.B.

Towards the latter part of the last, or very early during the present century, a fragrant grass was introduced into Jamaica, probably from the East Indies, and is now to be met with in most of our English islands, where it is cultivated in the gardens of the planters as an elegant and powerful diaphoretic, under the popular name of LEMON GRASS, from the peculiar and agreeable odour which it exhales from every part on being bruised.

This plant is not noticed in Dr. Broughton's catalogue of the Hortus Eastensis, of which the first edition was published at Kingston, Jamaica, in 1792, and the second at St. Jago de la Vega, or Spanish Town, in 1794; consequently the date of its introduction must be posterior to the latest of those years, and is to be found probably about the year 1799, a period closely corresponding with the statement contained in Lunan's *Hortus Jamaicensis*, published at St. Jago de la Vega in 1814, that it had been introduced about fifteen years before, was pretty generally cultivated, and thriven well; circumstances which accord pretty exactly with my own recollections of the plant some four and thirty years ago.

Lunan states that, although carefully watched for many years it had never been known to flower in Jamaica, and that, consequently, it could not be determined to what genus it belonged. He adds, however, that "It is thought to approach nearly to camel's hay (*andropogon schœnanthus*).

In Nevis, on the contrary, where I had frequent opportunities of observing it, it blossomed, as I find from my notes, every year, with the most unvarying regularity, in the month of December; but as it was an exotic, and as I understood it to be a well-known plant, I omitted its botanical examination, and inserted it, in my notes, upon the faith of others, under the name of ANDROPOGON SCHŒNANTHUS.

In the 4th vol. of the PHARMACEUTICAL JOURNAL, page 276, I find a notice, by Dr. Stenhouse, of an "*East Indian grass oil,*" which is said to be obtained from the ANDROPOGON IVRANDCUSA, a species probably identical with that spoken of by Lunan, and observed by myself in Nevis; but of the medical properties, or popular application of which, no account is given, the examination having been confined wholly to its chemical composition.

The root, which I never had an opportunity of examining, is described by Lunan, as being strong and woody, tasting something like lemon-peel, but having more of bitterness; its length is about half an inch in diameter, and several inches in length, marked, at intervals of about the fourth part of an inch with circular knobs of a yellow colour, and spreading laterally in every direction by means of rhizomata. The stem rises smooth and cylindrical to a considerable height without any appearance of articulation, and is clothed with leaves which clasp it at their base, and attain, in full-grown plants, a length of from two to four feet, with a breadth of about three-fourths of an inch; they are marked with longitudinal striæ, like those of the PANICUM JUMENTORUM or *guinea grass*, which they strongly resemble in appearance; from the summit of the stem arises, towards the end or middle of November, an arrow, bearing a miniature resemblance to that of the saccharum officinarum, from which the spike of flowers expands in the following month.

There could be little difficulty in obtaining specimens of the lemon grass in flower from Nevis; where, among other localities, it formerly flourished in the vicinity of the house at the estate, known by the name of Prospect; about two miles east of Charlestown, on the right of the road leading to Gingerland, and at a short distance from it.

The time in which the fructification may be expected to be found in the most perfect state of development, is that at which the cane usually arrows; but the specimens should be collected at various intervals during that time, to secure their exhibiting the various stages of development, in the most perfect manner.

The leaves are the only part of which I have known use to be made; and as these, according to Lunan, have been found to preserve their properties unimpaired during the period of a voyage across the Atlantic, they might possibly become a profitable article of export, if favourably introduced into the British market. The infusion taken warm at bed time is a powerful diaphoretic, and serviceable in colds and slight febrile attacks.

Lunan speaks of a decoction both of the leaves and roots as being employed in Jamaica; but as the active principle most probably exists in an essential oil, it seems not improbable that the larger proportion of this would be lost by evaporation during the prolonged action of the heat required for making the decoction.

It is more than probable that the roots, if collected at the proper season, would be found to contain the active principles of the plant in greater abundance, and in a more concentrated form, than the leaves; and that they are consequently better suited for the purpose of exportation; but what the proper season for their collection may be I cannot pretend to say.

Mr. Rhodie, in his remarks on the BEBEARU (or greenheart) tree of British Guiana, inserted in the fourth volume of the PHARMACEUTICAL JOURNAL, page 281, observes in a note that

"*No monthly rise or fall of the sap* has *ever* been observed in tropical forests by the writer, as is vulgarly believed; though he has resided within such forests the one-fourth of a century. The return of a vertical sun or the rains *alone influence the vegetable kingdom.*"

This writer is almost a solitary instance, as far as my observation goes, of an individual who has returned from a prolonged residence within the tropics, unconvinced of the power and reality of sol-lunar influence within the equatorial regions, upon the vegetable, if not upon the animal kingdom.

In the earlier part of my residence in the West Indies, I experienced many disappointments from a similar incredulity; and it was not till after repeated experiments upon the comparative growth of shoots during the increase and decrease of the moon, that I became convinced of my error, and satisfied that the popular opinion was far from being destitute of foundation; and I only regret having preserved no record of observations which were made merely to gratify my own personal curiosity, without any view to future discussion.

The fact was indeed so universally admitted, and the evidence in its favour so apparently conclusive, that it seemed as absurd to question its truth, as to question the daily tides which observation has proved to exist in the atmosphere, although the most minute attention is required to detect, and the most delicate instruments to measure them. In my second paper on the medicinal properties of the bark of the piscidia erythrina, (PHARMACEUTICAL JOURNAL, vol. iv., p. 114.) I have incidentally alluded to this opinion, and traced its antiquity to the days of the Cæsars. However, neither popular opinion, how venerable soever from its antiquity, the statements of poets, how high soever their reputation as classic authorities, nor the conflicting assertions of isolated individuals, unaccompanied by proof, can be admitted in the decision of questions of fact; and hence it is much to be desired that a series of experiments should be made by some of the correspondents of the PHARMACEUTICAL JOURNAL, who may chance to be resident within the tropics, in order to determine the point beyond dispute.

While resident at Scarborough, Tobago, my attention was attracted to the fact of the fish being more or less tainted during the moonlight nights; and, on inquiring into the cause, I was informed that all, or nearly all the fish consumed at Scarborough were taken on the north side of the island, and brought over, in carts, from Plymouth, during the night, that being the coolest period of the four-and-twenty hours, and consequently the least likely to prove injurious to the fish; but that it had been uniformly remarked that the fish so brought over, on the moonlight marked, [illegible] nights, or which had been exposed for ever so brief a period to the circular [illegible] rays of that luminary, presented, more or less, symptoms of every d[illegible] decomposition. This fact may, however, admit of explanation, upon principles materially different from those which have [illegible] been supposed to regulate the menstrual circulation of the sap in vegetables. A larger number of insects may be presumed to be abroad during the time that the moon continues above the horizon, after the close of day, than at other times, and these, depositing their ova on the fish, may produce that incipient decomposition, the reality of which I can personally attest. Whether this conjecture is correct or not, admits of satisfactory solution by a simple experiment, which it would be desirable to make, namely, by inclosing one portion of a fish taken about the period of the full moon, as quickly as possible after being removed from the water, in a transparent vessel of white glass, well secured against the entrance of insects, and exposing it thus secured to the full influence of the lunar rays during the night, along with another portion of the same fish left without any such protection. The experiment, to be conclusive, should be repeated during each of the four phases which constitute the lunation, in order to determine more satisfactorily whether there is any portion of the effect attributable to the action of the lunar rays in increasing the plumpness and succulence of the fish, according to the ancient opinion, preserved by Horace in the days of Augustus, that

> "Lubrica nascentes implent conchylia Lunæ—"
> The growing Moon the slippery shell-fish fills.

thus adapting them better to form a nidus for the ova of the insects.

Another circumstance, which admits perhaps of a somewhat similar solution, is the effect which moonlight has upon the germination of seeds. I have frequently, during my residence in the West Indies, heard the question discussed as to the fitting time for planting peas, and other leguminous plants, so as to secure a crop; the more experienced planters declaring that if planted so as to make their first appearance above ground during the moonlight nights, the whole of what came up would perish; while those who had but recently arrived, and had not had time to divest their minds of early prejudices, viewed the whole as a fable, and treated the results of experience as the delusions of imagination. The sceptics, however, on making the trial, learned to their cost, that popular opinions were frequently based upon repeated and careful observation, and should not be lightly rejected. The only seasons at which horticulture can be successfully practised in the West Indian islands, are those in which the earth is moistened by repeated showers, of the intensity of which little idea can be formed by those whose experience has not transgressed the temperate zone. At these periods, vegetation advances with a rapidity of vigour unknown in our climate, and insect life partakes of the universal impulse. But most insects shun the glaring light and sultry ardour of the sun throughout the day, and reserve their depredations for the calm and peaceful hours of the night, and they chiefly select those periods when the soft and silvery rays of the moon guide them without danger or inconvenience, in the selection of their food; if then, in their search, they meet the sweet and succulent cotyledons of the pisum, the vicia, or the phaseolus, just peeping above the surface, they make them their immediate prey, and thus frustrate the labours of the gardener. If, however, the planting has taken place so that the young cotyledons may pierce the soil during the darkness of the moon's conjunction with the sun; from the rapidity of vegetation, increasing with the age of the moon, they rapidly lose that saccharine character which would have invited depredation, and acquire, before the length of the moon's continuance above the horizon enables the insect pests sufficient space for mischief, a stature and robustness which places them beyond danger.

The correctness of this conjecture admits of being easily tested, by planting such seeds at various stages of the lunar revolution, in pots of well moistened earth, guarding them from external insects by a covering of glass, and exposing them, thus protected, to the full action of the lunar rays, at the time at which germination ought naturally to take place—if, under these circumstances the young plants flourish with equal vigour during the light or dark periods of the moon—the reason assigned for their well authenticated failure in the case I have mentioned, may be assumed as valid; otherwise some cause must be sought, more immediately connected with the imputed influence of the moon.

But these explanations will not account for the influence ascribed to the moon, on the durability of the most valuable timber trees of the tropics, which, if felled near the period of new moon, before the monthly ascent of the sap supposed to take place, has commenced, will last without decay for centuries of years—while, if felled during the time of the moon's opposition to the sun, the duration of the timber is limited to a few brief years. This appears to me to admit of rational solution only upon the same principle which accounts for the greater durability of autumn or winter felled timber among ourselves. But, if the monthly circulation of the sap be satisfactorily disproved, which I am far from asserting may not be the result of more careful experiment, some other cause must be sought for the phenomena to which I have referred, or the phenomena themselves must be shown to have no real existence.

Before I conclude, permit me to call the attention of such of your readers as may happen to have a connection with our West India islands, to the cucurbitaceous plants which are to be found there whose properties have either been overlooked, or never subjected to examination. Among the first of these I may notice a little climber abundant in the hedges of Nevis and St. Kitts, where it is known by the common name of *ink berry*, from the dark purple juice, nearly approaching to black, yielded by its small oval berries, which may be gathered in abundance in a state of maturity about the months of August and September. These, which must not be confounded with those of many of the smaller passifloræ, as the P. suberosum, from which they may be easily distinguished by the form of their seeds, which is a miniature resemblance of those of the cucumber or the melon, are the produce of the *Melothria pendula*, of which all the flowers which I examined, belonged to the class triandria, and were hermaphrodite. In their immature state, they perfectly resemble the cucumber (*Cucumis sativus*) and would make a most excellent pickle, well suited for the British market.

Among the second, is the *Luffa cylindrica*, a plant which I recollect to have seen climbing up the walls of the loftiest houses in the town of Puerta d'Espana in Trinidad, and which I have met occasionally in the other islands, where it was known by the name of sponge cucumber, and its fruit, divested of its pulp and seeds, employed as a strainer. In the fourth volume of the PHARMACEUTICAL JOURNAL, pp. 360, and 466, I find interesting notices of some medicinal species of luffa growing in Brazil, and promising to yield a valuable addition to our Materia Medica. A similarity of character most commonly pervades families and genera, of which the genus Solanum, although furnishing edible products in some instances, rare indeed, when compared with the extent of the genus, is not an inapt example: hence, reasoning from analogy, it appears reasonable to expect to find some correspondence of property between the *Luffa cylindrica* of Trinidad, and the *L. drastica* and *purgans* of Brazil. Tobago also contains a variety of cucurbitaceous plants, many of them unknown to botanists, which also merit minute investigation.

14, *Octagon Plymouth*, 25*th October*, 1846.

ON THE SYRUP OF IODIDE OF IRON.

BY MESSRS. T. AND H. SMITH, EDINBURGH.

Most of the processes for syrup of iodide of iron which have hitherto come under our notice, appear to us unnecessarily tedious and complicated; although in the whole range of preparations included in the compass of the Pharmacopœias there is not, perhaps, a single one in which such a state of matters should be more carefully avoided. Consistently with correct adherence in the constitution of the resulting compound to the recognised formula, every effort should be made to render the operation simple, easy, and, above all, of speedy execution. The solution of iodide of iron before combination with the sugar in the form of syrup, is decomposed with such rapidity, that the eye can easily trace the changes of colour and appearance by which the decomposition is accompanied. The liquid from being quite transparent and almost colourless passes through deeper and deeper shades of green to brownish red, and in an amazingly short time is entirely decomposed and quite muddy from an abundant ferruginous precipitate. After a sufficient quantity of sugar has been dissolved in the solution to form a syrup, these changes are almost entirely arrested; so that even in an open vessel many days intervene before any striking alteration of colour can be remarked.

The process used by us for the syrup of iodide of iron is a modification of the formula of the Edinburgh Pharmacopœia, and, as we have by repeated trials long proved its value, it is here given for the use of the readers of the PHARMACEUTICAL JOURNAL.

Let a solution of iodide of iron be made in a flask with six hundred grains of iodine, two hundred grains of pure iron filings, and six ounces of *cold water*. The action being finished, after smart agitation for a few minutes, let the liquid, while yet hot from the intense chemical action, be boiled over a gas flame or in any other more convenient way till its brown colour has disappeared, which is easily known by the froth becoming white. Let the liquid be now at once filtered through a small filter into a bottle, which has previously been marked, by pasting on the outside of the bottle a small slip of paper at the level of eighteen fluid ounces, and containing thirteen ounces and a half of refined sugar, broken down into pieces about the size of peas. When the solution has all passed through, which fortunately takes place with unusual rapidity, let the filter be washed with boiling water, a further quantity of which must also be poured into the bottle till the liquid reaches the level of the mark. Let the bottle then be introduced into a hot water-bath and briskly shaken at short intervals, till the sugar is quite dissolved; and having adjusted the level of the syrup to the mark by the addition of water, after again shaking the bottle, let the syrup, without a moment's delay, be bottled into small phials, and secured as much as possible from contact with the air and light, by careful corking, and covering the bottles with some dark-coloured paper. These are the proportions adopted in the Edinburgh Pharmacopœia, and the syrup contains one grain of the iodide in twelve minims, or five grains in one drachm; but as the syrup first proposed by Dr. A. T. Thomson is weaker by two-fifths, containing three grains to the drachm, and which we believe is the strength of the syrup used in England, it is evident that the proportions must be varied accordingly. They will therefore stand thus:—

252 grains iodine
100 grains iron filings
2½ ozs. cold water
10 ozs. pure sugar.

Let the syrup, when finished, measure twelve ounces and a half, the level occupied by this quantity having been marked off on the bottle before-hand. It is advisable that the bottle used in the preparation of the syrup should not have a capacity more than about a third above the quantity to be made.

MODE OF PRODUCING RAPID VESICATION.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

SIR,—My attention has been on several occasions directed by medical men to the best mode of producing rapid vesication. Amongst others, it occurred to me that the Impermeable Piline of Markwick might be used as an elegant method of employing certain powerful yet volatile applications, and an experiment upon my own person fully confirmed the truth of the idea.

A liniment was prepared according to the following formula:—

℞ Liq. Ammon. Fortiss. ʒj.
Ol. Olivæ, ʒij. Misce.

Six drops of this liniment were applied to the woollen side of the piline, placed upon the skin, and gently pressed with a handkerchief. In ten minutes, a perfect blister was produced, the size of a crown-piece. The piline is not in the least injured by such an experiment, and after being washed, may be used again, for the same or for other purposes.

Your obedient Servant,
G. F. SCHACHT.

Clifton, December 23d, 1846.

SYRUP OF POPPIES.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

SIR,—I BEG to suggest that the variation in strength of our Syrup of Poppies, may depend in a very great measure, upon the seeds being partially, or in some cases, entirely, abstracted. It is a practice with many of our brethren, to use the broken capsules for syrup, enabling them to supply a perfect capsule over the counter. Again, the small growers generally pierce a number of the capsules to obtain seed for a future crop, the seed constituting a very considerable portion of the weight (seldom less than half the entire weight) and being inert, the absence or presence of the seed, when the capsules are weighed, is of material consequence. In some establishments, it is the custom to weigh the casuples previously deprived of seed, thereby producing an article about twice the strength of the Pharmacopœia syrup (see Journal, vol. ii., fol. 647).

If on receiving a supply of poppies, an average sample (excluding broken ones) say weighing ℔iij, be again weighed after the removal of the seed, that weight of capsule without seed, might, I think, with propriety be used for every ℔iij of poppies ordered as long as the same supply of poppies lasted, and do not doubt the result would be more satisfactory than weighing sometimes broken, sometimes sound capsules, indiscriminately.

B., M.P.S.

January 5th, 1847.

HISTORY OF THE INTRODUCTION OF GUTTA PERCHA INTO ENGLAND.

BY DR. WM. MONTGOMERIE.

(*From the Mechanics' Magazine of October*, 1846.)

Sir,—Having in many late numbers of the *Mechanics' Magazine* seen frequent notices of the patents taken out for the application of the new substance, *gutta percha*, to various purposes, and its extensive usefulness becoming daily more apparent, it has occurred to me that as I was the person through whom the substance was first brought to the notice of the public, a few observations from me regarding it, might be valued by many of the readers of your highly popular and useful journal.

I may not arrogate to myself the actual discovery of *gutta percha*; for, although previous to my introduction of it, it was quite unknown to Europeans, still it was known to a few of the inhabitants of certain localities of the Malayan forests; but even most of the native inhabitants of the towns and villages near those localities, to whom I showed it, did not know what it was, and it was likely to have remained unknown from the very trifling uses to which it was applied, being, as far as I could ascertain, only occasionally used to make handles for *parangs*, (wood choppers,) instead of wood or buffalo horn.

As far back as 1822, when I was on duty at Singapore as assistant-surgeon to the residency, I had obtained the *name* of it, while making inquiries relative to caoutchouc, of which there are several varieties; and some very fine specimens were brought me, particularly one called *gutta girek* (the *i* sounded as in Italian, and the *k* almost mute;) and I was told that there was another variety called *gutta percha*, and sometimes *gutta tuban*, which they said was harder than the *gutta girek*; but none of it was brought to me at that time, and I lost sight of it, having returned to the Bengal presidency. But being again sent on duty to the Straits settlements, and while at Singapore, in 1842, I on one occasion observed in the hands of a Malayan Woodsman the handle of a *parang*, made of a substance which appeared quite new to me. My curiosity was excited, and on inquiry I found it was made of the *gutta percha*, and that it could be moulded into any form by simply dipping it in boiling water until it became heated throughout, when it became plastic as clay, and when cold, regained, unchanged, its original hardness and rigidity.

I immediately possessed myself of the article, and desired the man to fetch me as much more of it as he could get.

On making some experiments with it, I at once discovered that, if procurable in large quantities, it would become extensively useful; and even if only in small quantities, it would still be invaluable in the formation of many surgical instruments, particularly as a substitute for caoutchouc in many of the articles made of that substance, as I had found that those instruments which were made of caoutchouc, which had been dissolved in naphtha, or other solvent, became speedily damaged, and totally useless in the damp and hot climate within the tropics. I therefore wrote to the Medical Board in Calcutta, strongly recommending its adoption, and sent specimens of the substance. After having examined it, the Board highly approved of my suggestion, and directed me to procure and send some of it to Calcutta, which was done.

I also addressed a communication to the Secretary of the Society of Arts, London, and sent some of the substance for investigation and analysis, for which, after my return to England, I had the honour to receive the Society's gold medal.

Being in bad health at the time the substance was brought under my observation, I was unable to prosecute the inquiry in the way I could have wished, not being able to go in person to the forest, and was therefore obliged to satisfy myself with such information as the natives could give me. I ascertained, however, that the tree producing it is one of the largest of the forest, growing to the size of three or four feet diameter; that the wood is of no value as timber, but that an edible concrete oil is procurable from the fruit, and often used by the natives with their food.

On extending my inquiries, I found the substance was quite unknown to the people at Malacca, although that place is only about a degree to the north of Singapore, and was told that the natives of the island of Sumatra did not know it, although at first I was inclined to suppose that the substance might have obtained its name from that island, the Malayan name for the island of Sumatra being "Pulo Percha."

I ascertained, however, that the tree was common in many places in the island of Singapore, and also in the forests of Johore, at the extremity of the Malayan peninsula; and was informed by the Buggese traders that it grew at Coti, on the south-eastern coast of the island of Borneo; and on requesting Mr. Brook to inquire about it at Sarawak, on the west coast, was informed by that gentleman that it was found in the forests there also.

The following is a quotation from Mr. Brook's communication to me: "The tree is called *Niato* by the Sarawak people, but they are not acquainted with the properties of the sap; it attains a considerable size, even as large as six feet diameter; is plentiful in Sarawak, and most probably all over the island of Borneo."

I have reason to believe also that it is abundant on the thousand islands that cluster to the south of the straits of Singapore.

That it is very abundant is satisfactorily proved from the circumstance of its being now collected at Singapore to the extent of some hundreds of tons annually, although unknown to the public in 1842. But although the tree is at present sufficiently plentiful, yet the substance, I fear, will become soon more difficult to be procured, from the destructive mode pursued by the natives in obtaining it.

A magnificent tree of fifty, or more probably 100 years' growth, is cut down, the bark stripped off, and the milky juice collected and poured into a trough formed by the hollow stem of the plantain leaf; it quickly coagulates on exposure to the air; but from one tree, I was told that not more than 20lbs. or 30lbs. are procured.

I believe, however, that the juice may be obtained by tapping the tree, and that it might thus be made to produce in moderate quantities for many years; but this mode is too slow for the natives. Besides, although the first discoverer of a tree might be inclined to do so, the next who found it would, probably, cut it down, there being no property in the trees of the forest excepting where grants of land have been given.

Allow me, now, to correct an erroneous mode of pronouncing the name, which I have observed used by many gentlemen with whom I have conversed on the subject. The word is a pure Malayan one, *gutta*, meaning the gum or concrete juice of a plant, and *percha*, the particular tree from which this is procured. The *ch* is not pronounced hard like a *k*, but like the *ch* in the English name of the fish perch. Had I thought there was a probability of the name being mispronounced, I might have used the ununcouth orthography pertsha, but it would have run the risk of being taken for a Russian or Polish name. Some of your readers may think I place too much value in a name; but in these days, when public attention is beginning to be attracted to the affairs of the "farther east," and the spirit of enterprise is leading many of our countrymen to explore those interesting regions, if one of them were to inquire of a Malay for gutta *perka*, he would be told the thing was unknown, when perhaps plenty of the *gutta percha* might be procurable by pronouncing the name properly.

Among the various uses to which it has been proposed to apply the *gutta percha*, I have observed some for which its properties render it peculiarly applicable, and one in particular, printing for the blind, for which the clear sharp impression it receives, and the toughness of the substance, admirably suit it, as well as in the formation of embossed maps for that unfortunate class.

As an application of it of minor importance certainly, but one of very general usefulness, it has been suggested to me that it would be found useful in stopping decayed teeth.

Hoping the above may be deemed worthy a place in your pages,

I am, Sir, yours, &c.,

W. Montgomerie.

Caledonian U. S. Club, Edinburgh, October 26, 1846.

OF THE TREE WHICH YIELDS THE GUTTA PERCHA, OR GUTTA TUBAN.

Nat. Ord. Sapotaceæ.

(*Chrysophyllum? Sideroxylon? Bassia?*)

Until very recently, the tree which yields the *gutta percha*, or *gutta tuban*, was entirely unknown to botanists. It has now, however, been ascertained to belong to the natural order *Sapotaceæ*. But whether it is the product of one of the already existing genera, *Chrysophyllum*, *Sideroxylon*[*], or *Bassia*, or of some new genus, is at present somewhat doubtful The following extracts from the writings of the late Mr. W. Griffiths, the Rev. Edward White, and Sir W. J. Hooker, contain all that is known at present on the subject:—

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[*] It has been reported, but we know not on what authority, that *Sideroxylon acuminatum* is the gutta percha tree.

1. "ON THE GUTTA PERCHA TREE, *by W. Griffiths, Esq., F.L.S.*—This substance, of which an analysis was given by Dr. Mouat *, was stated by me†, from examination of a small branch without flowers or fruit, communicated by the Rev. Mr. White, Chaplain of Singapore, to be produced by a plant of the natural family *Sapoteæ*, and to have the character of the genus *Chrysophyllum*.

"The leaves are alternate, rather distant, narrow lanceolate, attenuate at the base, caudato-cuspidate at the apex: the under surface of a golden brown colour with indistinct distant straight secondary veins.

"The valuable properties of *Sapoteæ* are many: it is known for producing much esteemed fruits, good timber, useful gum, for affording a vegetable oil or butter; an ardent spirit and febrifuge medicine; the flowers in addition are used as an article of food.

"But the main characteristic, and that with which we have most concern, is its milky juice. And although thus far the *gutta percha* tree agrees with the general character, yet its juice differs very remarkably by the absence of adhesiveness, to which peculiarity indeed it owes its value. This promises to be considerable; for a vegetable product which is softened by hot-water, while at the same time, it is capable of being moulded into any shape, that afterwards hardens, (in which state it is not acted on by a hot or moist climate,) so as to be preferred to horn for the handles of axes, is capable of extensive application."—*Journal of the Agricultural and Horticultural Society of India*, vol. iii., part 3.

2. "ACCOUNT OF THE TREE WHICH PRODUCES THE GUTTA PERCHA. *By the Rev. Edward White.*—GUTTA percha, Linn. Cl. *Dodecandria Monogynia*; Nat. Fam. related to *Sapotaceæ* and *Ebenaceæ*.

"Trunk straight, lofty, diam. 3 feet at base; branches numerous, ascending: terminal buds white from exuding gutta.

"Leaves crowded at extremity of the branches, alternate, petiolate oblong with a small point at the apex: base tapering—length 4-5 inches, breadth 2 inches. Surface, *upper*, bright green, feather nerved; *under*, brownish red from dense pubescence: mid-rib and petiole the same. The latter one inch long, channelled; not articulated with the stem.

"Stipules 0. Flowers axillary, sessile, four together, disposed in a quadrangul manner; small and white.

"Bracts 0. Calyx persistent, sepals 6 brownish red, in a double series, three outer largest. Œstivation valvate.

"Corolla monopetalous 6-cleft, lobes ¼ and tube ⅓ inch long, deciduous. Œstivation twisted.

"Stamens 12 in a single series, equal, similar, inserted in the mouth of the tube. Filaments equal in length to the lobes of the corolla.

"Anthers sagittate, exturse, [*extrorsæ?*] affixed by their base to the filaments. Pollen scanty.

"Ovary superior, conical, sessile, seated on a disk, 6-celled, each cell containing a single ovule suspended from a central axis; funiculus conspicuous.

"Style longer than the stamens, persistent; stigma undivided. The specimen was not in good condition, and I was unable to ascertain whether all the anthers are fertile: apparently not. The timber is represented as hard, and used for building prows, &c. The Malays speak of another less robust tree with similar leaf, but different in colour of its flower (red) and shape of its fruit, which yields a white, brittle, and useless gutta. The fruit of the former is sweet, of the latter acid."—*Journal of the Agricultural and Horticultural Society of India*, vol. iv., part 1.

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* *Journ. Agr. and Hort. Soc.*, ii., p. 101.

† *Calc. Journ. Nat. Hist.*, v., p. 116, where, by inadvertence, the fruit is stated to be edible, instead of, to produce an edible oil.

3. "GUTTA PERCHA, *by Sir W. J. Hooker.*—This is a vegetable substance, which though only known to Europeans for a few years, is now extensively used in the arts for various purposes, as a substitute for caoutchouc, because it has the valuable property of dissolving without being volcanized. But while thus frequently employed, and constituting an important article of commerce, the plant which produces it was unknown, until, by a lucky accident, during the residence of Mr. Thomas Lobb in Singapore, where he has been (and in other Malay islands) employed in a botanical mission by Mr. Veitch of Exeter, he detected this plant and sent home numerous specimens, which prove it to be a new sapotaceous plant, of which a figure and description will shortly appear in this Journal, under the name of *Bassia?* Hook. Accompanying numerous well-dried specimens (though unfortunately without corollas), Mr. Lobb judiciously sent small sections of the wood, which is peculiarly soft, fibrous and spongy, pale-coloured, and traversed by longitudinal receptacles of reservoirs, filled with the gum, forming ebony-black lines."—*London Journal of Botany* for January, 1847.

CHEMICAL EXAMINATION OF THE CONCRETE JUICE OF THE SAPOTA ACHRAS, DC.,

(ACHRAS SAPOTA, ROXBURGH) OR COMMON SAPOTA TREE.

BY J. G. SCOTT,

Of the Honourable East India Company's Dispensary, Calcutta.

THIS concrete juice, called by the late Mr. Griffiths, *Gum of the Sapota Tree,* which Mr. Scott examined, was procured from specimens in the Honourable Company's Botanic Gardens.

"The juice of the *Achras Sapota,* was received in a concrete state, the greater portion in rounded pieces, or tears of various sizes.

"It is slightly adhesive to the touch. When dried at a common temperature, it gradually hardens, entirely losing its adhesiveness, and is easily broken. It is soluble in essential oils, the solution having a milky appearance; insoluble in absolute alcohol and cold water; immersed in boiling water it softens and becomes extremely glutinous. It burns in the open air with a bright smoky flame, and when heated, it fuses and remains more or less viscid. It is entirely soluble in washed ether, from a solution of which it is precipitated by alcohol.

"The juice of the Sapota-tree (as well as the concrete juices of several plants containing *caoutchouc* which I have analyzed lately,) differs from the *gutta percha* in its most important property. The action of boiling water on all those I have examined, softens the mass, but it renders it at the same time so extremely adhesive, as to obviate the possibility of rolling it out, or forming it into any shape whatever. The mass remains in this viscid state for some time, when it hardens and becomes friable. The *gutta percha,* on the contrary, acquires no adhesiveness by the action of boiling water, and immediately on exposure to a cooler temperature, it regains its original toughness and flexibility."—*Journal of the Agricultural and Horticultural Society of India,* vol. iii., part 3, Calcutta.

CHEMICAL EXAMINATION OF GUTTA PERCHA.

BY J. G. SCOTT,

Of the Honourable Company's Dispensary, Calcutta.

"THE *gutta percha* forwarded to the Medical board, by Dr. Montgomerie from Singapore, is one of those neutral vegetable substances, of which a proximate analysis cannot be made. On a careful examination, I have found it to possess the following properties:—

"It is insoluble in water and in alcohol; soluble in volatile oils, and partially so in ether, from a solution of which it is precipitated by alcohol.

"It melts when exposed to a temperature of 248°, and on cooling, remains in a semifluid adhesive state. When heated sufficiently in the open air it catches fire, burning with a strong yellow flame, and emitting much smoke.

"On distillation it furnishes a volatile oil, similar in all its properties to *caoutchouc*.

"It is insoluble in petroleum and in nitric ether.

"The *gutta percha* is in thin films, varying in colour from a pale yellow to a pinkish tinge, and is destitute both of taste and smell. It is hard at a common temperature, but when immersed in boiling water, it softens so much, as to be capable of being beaten into a mass, and formed into any shape required; this, however, must be done immediately, for the mass on cooling becomes hard and unyielding.

"When in a soft state, it can be stretched out into thin slips much beyond its usual length, but it does not recover its former bulk when the force is withdrawn. The slips are transparent and elastic.

"I feel no hesitation in pronouncing the *gutta percha* a species of *caoutchouc*, possessing unquestionably some of its principal properties, but it is a species which I believe has not been examined before."—*Journal of the Agricultural and Horticultural Society of India*, vol. iii., part 3, Calcutta.

THE GUTTA PERCHA PATENTS.

In the *Mechanics' Magazine* for the past year are given abstracts of all the patents which have been granted in relation to Gutta Percha. The following is a list of these patents :—

No. 1. Richard Archibald Brooman, of No. 166, Fleet Street, London, for "*Certain Improvements in the Application of Fuels, Mastics, and Cements.*" Being a communication from abroad. Patent dated March 11, 1845. Specification enrolled September 11, 1845. The substance employed under this patent is Gutta Percha. The editor of the *Mechanics' Magazine* observes, that this, being the first, may be considered as the master patent of the whole.

No. 2. Richard Archibald Brooman, for "*A Thread made from a substance not hitherto applied to that purpose, and also the application of it to the manufacture of Piece Goods, Ribbons, Paper, and other Articles.* (A communication). Patent dated March 27, 1845. Specification enrolled September 27, 1846. Here also the subject of the patent is Gutta Percha.

No. 3. Christopher Nickels, York Road, Lambeth, for "*Improvements in the Binding of Books, &c.*" Patent dated May 20, 1845. Specification enrolled September 20th, 1845. In this patent Gutta Percha is used as a substitute for caoutchouc in bookbinding.

No. 4. Charles Keene, of Sussex Place, Regent's Park, Esq., for "*Improvements in Boots, Shoes, Gaiters, Overalls, and other like articles of Apparel.*" Patent dated May 29th, 1845. Specification enrolled November 29th, 1845. The improvements consist in making the articles waterproof, by Gutta Percha.

No. 5. H. Bewley, for "*Certain Improvements in Flexible Syringes, Tubes, Bottles, Hose, and other like Vehicles and Vessels.* Patent dated September 4th, 1845. Specification enrolled March 4th, 1846. The principal element in these improvements is Gutta Percha.

No. 6. Charles Hancock, of Grosvenor Place, for "*Certain Improve-*

ments in the Manufacture of Gutta Percha, and its applications alone, and in combination with other substances." Patent dated January 12th, 1846. Specification enrolled June 12th, 1846.

Mr. Hancock suggests several methods of purifying the substance, which generally comes home much mixed with extraneous matter: it may be dissolved by heat and strained, or passed through a screw-press, or melted by the addition of rectified oil of turpentine, and after filtering through flannel or felt, the solvent may be evaporated. In every case, the *gutta percha* should form a residuum, of the consistency of dough or putty, this plastic state being gained by the maintenance of a suitable temperature during the above process.

Mr. Hancock would combine *gutta percha* with caoutchouc, and a substance called *jintawan*, (we have no clue as to what this *jintawan* may be), in order to form an elastic material, impervious to water; varying the proportions according to the greater or less degree of hardness or of elasticity required. For making elastic bands, a compound is used, where fifty parts of *gutta percha* are combined with twenty-four of *jintawan*, twenty of caoutchouc, and six of orpiment or sulphuret. From a mixture of these, Mr. Hancock also prepares a light porous and spongy material, suited for stuffing or forming the seats of chairs, cushions, mattresses, saddles, &c.; likewise springs of clocks, clasps, belts, garters and string. Wherever the requisite is flexibility and elasticity, then the quantity of *gutta percha* should be diminished; and increased where firmness is wanted. By prolonging the process, much hardness may be acquired, and moulds and balls of *gutta percha* will bear turning in the lathe, like wood or ivory. The material is also applicable to useful and ornamental purposes, as picture-frames, door-handles, walking-sticks, chessmen, handles of swords and knives, buttons, combs, flutes, &c. &c.

By the admixture of sulphuric acid, or of a tenth or larger part of vegetable wax or tallow, any degree of solubility, pliancy and softness may be acquired; or the composition may be used as varnish, to cover other materials, concealing any odour, and imparting a surface impervious to water. In printing and painting of silk or cotton, it seems applicable to many uses, for it amalgamates readily with colours; when interposed between two thin sheets of gold leaf or tin foil, it combines them firmly in one.

Mr. Hancock proposes applying the *gutta percha*, to numerous other purposes.

ON THE FARINA OF THE TACCA PINNATIFIDA.

BY MAJOR D. WILLIAMS.

In the *Journal of the Agricultural and Horticultural Society of India*, vol. iv., part 1, are the following memoranda, by Major D. Williams, respecting a sample of farinaceous powder, prepared from the roots of the Tacca pinnatifida, a plant which it appears abounds in certain parts of the province of Arracan:—

"I have the pleasure to send you, to be laid before the Society, the roots of a plant that grows in the island of Chedooba, of which a farinaceous food is prepared equal, if not superior, to the arrow-root. I send two bottles of the meal or powder prepared by me, after the manner the Mugs prepare it for exportation to the Eastward, chiefly, I believe, for the China market. The Mugs, after removing the peel, reduce the root into a pulp by rubbing it on a fish's skin, then strain the pulp through a coarse cloth, wash it four times in water, and dry the powder in the sun for exportation.

I should like to know what root it is.

* * * * *

I have had the pleasure to receive your letter by the Ganges, and am about to collect more of the plants, which I find to be growing all around me here. What I shall bring with me for you by the next trip of the Amherst (if I succeed in obtaining leave of absence), will have been gathered from an island opposite this place, at the mouth of the Kyouk Phyoo harbour roadstead, and it abounds, I hear, on Saddle island, also close by.

The Chedooba people only, I hear, prepare the powder from it, and use it in no other way. At the island opposite there is now a man from Chedooba making a quantity of powder; it is strange they have never (I mean the Mugs) carried it to the Calcutta market.

I will bring with me both root or bulb and the plant itself.[*]

The plant is named *Pengbwaoo*, in the Birman language, and by the Mugs, *Kyweoo.*

It is not used as a vegetable: of the powder a sort of bread or sweetmeat is made.

The stalks when old fall down and deposit the pod and seed on the ground, whence, as you may imagine, myriads of new plants are generated.

Kyouk Phyoo, Dec. 20th, 1844.

ON CARTHAMIN.

BY ADOLPH SCHIEPER.

CARTHAMIN forms a dark, brownish-red, glistening powder, which in thin layers, or in a solution of spirit of wine, displays the most beautiful purple colour. It is very difficult of solution in water, and stains the latter only slightly red, but is much more soluble in alcohol, particularly when moderately hot. If a drop of the solution be evaporated on a watch-glass, the latter becomes covered with film, which, by incident light, presents a beautiful green metallic lustre. By boiling, both the alcoholic and aqueous solutions are easily changed; they assume a yellowish colour, and which continues on cooling. Carthamin is quite insoluble in ether. By carbonated and caustic alkalies, it is dissolved in all proportions, but this does not at all prove that carthamin possesses the qualities of an acid, for it is impossible to destroy by means of it the alkaline reaction even of a single drop of a solution of soda. It must be classed among the perfectly indifferent bodies, for the fact that it enters, under certain circumstances, into combination with oxyde of lead, is no sufficient proof of its acid qualities.

Few substances are so little permanent in their solutions as carthamin.

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[*] These have since been received, and referred to Dr. Wallich; and the following is extracted from his note:—

"You have gratified me more than I can tell you, by sending me the specimen of this extraordinary plant. It is Tacca pinnatifida; it grows wild in the Malay Islands, Cochin China, &c.; perhaps somewhere in the peninsula of India. I never heard of it so near as Arracan. It is always found near the sea. It is the gigantic size, and the locality, not to mention the fine ripe fruits, that delight me so much."

[In Dr. Pereira's *Elements of Materia Medica*, vol. ii., p. 1009, 2d. ed., will be found a description of *Tahiti arrow root*, or *Otaheite salep*, obtained in the South Sea islands, from the *Tacca pinnatifida*, Forst., or, according to the recent examination of the plant by Mr. Nuttall (*American Journal of Pharmacy*, vol. ix., p. 305), from a new species of *Tacca*, which he calls *T. oceanica.*—ED. *Ph. Journ.*]

The alkaline solutions are constantly undergoing rapid decomposition, whether the atmosphere be or be not excluded; but in the former case, it proceeds somewhat less rapidly. A solution of a small quantity of carthamin in a very diluted solution of potash, absorbed half of its volume of oxygen gas.

The combination of carthamin with soda, which, according to Döbereiner form silky glittering crystalline needles, does not appear to exist, which might be presumed from the qualities of the carthamin. Carthamin is dissolved by carbonate and caustic soda, and also ammonia, with a deep yellowish red colour, and may be precipitated from these solutions by acids. By standing, the alkaline solutions become paler, while the carthamin undergoes decomposition. The ammoniacal solution gives with corrosive sublimate, a red precipitate, which disappears on the addition of acids; with a solution of chloride of calcium, and chloride of barium, no precipitate. Baryta water dissolves carthamin, and forms a yellow fluid, which, if left standing for some time, becomes decomposed, but out of which the carthamin can be precipitated by acids immediately after its solution. The ammoniacal solution forms also with chloride of iron, a brownish-red precipitate, probably a compound of oxide of iron and carthamin. With chloride of tin it yields a yellowish-brown precipitate, soluble in acetic acid, and also, by the aid of heat in the mother liquor; the carthamin suffering no alteration thereby. Bichromate of potash also precipitates the carthamin from its ammoniacal solution, but on heating it, the whole dissolves into a yellow fluid, the carthamin becoming oxidised. In concentrated sulphuric acid, carthamin is dissolved with a red colour, without being thrown down on the addition of water. From its alkaline solution, carthamin is at first thrown down by nitric acid, but it changes very soon, the flakes turn brown, and on being heated they dissolve and yield a yellow fluid, which forms with oxide of lead, yellow compounds. The carthamin is further precipitated from its solution by sulphurous acid, but on being heated with it, it dissolves and forms a yellow fluid.

Sulphuret of ammonium causes no change in carthamin. A peculiar decomposition of the ammoniacal solution of carthamin is caused by salts of copper. Thus, if to the first be added a solution of ammoniacal sulphate of copper, a dark brown, almost black precipitate is formed, whilst the filtered liquid has a green colour. The precipitate is insoluble in hydrochloric acid, and being treated with potash ley and ammonia, forms brown flakes and a yellow solution. All the reactions to which this combination was subjected, showed, that it consists of a protoxide of copper combined with a yellow pigment, which has been formed by the oxidation of the carthamin, at the expense of the oxygen contained in the oxide of copper.—*Ann. der Chemie u. Pharm.*, lviii.

ON THE QUANTITY OF STARCH CONTAINED IN VARIOUS VEGETABLE FOODS.

BY DR. KROCKER.

As it is almost impossible to determine accurately the proportion of starch contained in a vegetable by a mechanical process, Dr. Krocker proceeded in the following manner: he first converted the starch into sugar, and calculated the carbonic acid which escapes during the fermentation of the sugar, by its loss. He previously ascertained that neither sugar nor dextrin pre-existed in the different sorts of grains submitted to examination, When wheat, rye, &c. &c., were exhausted by water, and washed for some time, the residue obtained from the solution by evaporation contained no dextrin, and only a small quantity of sugar. But when the meal of these grains was exhausted by lime-water, the lime removed by passing carbonic through the liquor, and the filtered liquid evaporated in the water bath, neither sugar nor dextrin could be discovered in the residue. Hence it is obvious, that the sugar obtained in the preceding experiments was formed by the influence of free acid. The whole of the carbonic acid therefore, which was developed during the fermentation was referable to the starch.

It is requisite, in these experiments, to employ a certain quantity, and which must be determined by circumstances; for while on the one hand too large a quantity of grain causes fermentation to continue too long, so on the other hand if the quantity be too small, the errors in the observations are much magnified. It is best to mix a proportionately large quantity of yeast with a small quantity of the substance, for which the supposed proportion of starch can always serve as guide. Thus, of the different sorts of flour three grammes, of potatoes six to eight grammes. The weighed out quantity is to be heated with water in a porcelain capsule until it becomes soft, when about fifteen drops of sulphuric acid diluted with five parts of water are to be added, in order to convert the starch into sugar. From time to time, in order to try whether the conversion has taken place, a drop of the mixture is to be put into a watch-glass and mixed with a small quantity of a solution of iodine, and then carefully returned to the mixture. As soon as the colour of the mixture ceases to be changed to blue or wine-red by the solution of iodine, the whole mass is to be evaporated to the consistency of treacle, and poured into the one flask of the alkalimetrical apparatus of Fresenius and Will. In this apparatus the evolved carbonic acid passes into a second retort, as in the examination of potashes. In this flask it is deprived of the vapours of water and alcohol by concentrated sulphuric acid. But the tube which descends into the mixture must not be closed, or the acid will easily return. It is advisable also to select a larger flask for containing the fermenting mixture, and as small an one as possible for the sulphuric acid. The mixture having been introduced into the larger flask, the free acid must be neutralized, for which purpose, Dr. Krocker employed a very concentrated solution of tartrate of potash, which he added in a quantity corresponding to the acid present. The bitartrate of potash which was formed, promoted the fermentation. In order to facilitate the fermentation, about twenty grammes of fresh yeast are to be added to the prepared mass, and, by a separate experiment, the quantity of carbonic acid contained in the yeast is to be determined. The apparatus is now to be exposed to a constant temperature of 67° Fahr. After four or five days, the decrease of weight of the apparatus amounts scarcely to 0.001 gramme, and the experiment is finished. For accuracy, however, a freshly weighed quantity of yeast is to be added, to see whether there will yet take place any diminution of weight within the next twenty-four hours. It is advantageous to add during the first forty-eight hours, some weighed yeast. The quantity of carbonic acid, is ascertained by the loss of weight, but from this must be abstracted the weight of the carbonic acid contained in the yeast. The starch, $C_{12} H_{10} O_{10}$, takes up 2 H O, and is converted, first into $C_{12} H_{12} O_{12}$, and afterwards into $4\ C\ O_2$ and $2\ C_4 H_6 O_2$. In an experiment made with perfectly pure starch obtained from beans, 2,544 grammes yielded 13.1 carbonic acid. The twenty grammes of yeast that had been added, contained 0.16 grammes of carbonic acid. Hence therefore, for the starch, there remained 1.16 grammes of carbonic acid, which correspond to 83.52 per cent. starch, or after the subtraction of 16.26 per cent. water, to 99.69 per cent. starch. The other kinds of flour yielded :—

	Water per cent.	ANHYDROUS SUBSTANCES. Starch. I. per cent.	II. per cent.	Gluten, Albumen. per cent.
Wheat Flour, No. 1, from Vienna	13.828	65.21	66.16	19.16
" " No. 2, " "	16.660	66.93	57.80	13.54
" " No. 3, " "	12.731	57.70	57.21	21.97
Talavara Wheat, from Hohenheim	15.432	55.92	56.50	16.54
Sandomir Wheat	15.480	53.83	52.92	17.18
Whitington Wheat	13.930	53.06	51.84	17.11
Rye Flour, No. 1, from Vienna	13.780	61.62	60.56	11.94
" " No. 2, " "	14.680	54.84	54.12	18.71
" " from Darmstadt	13.660	57.07	57.77	.....
Rye [*Staudenroggen*] from Hohenheim	13.940	45.39	44.80	17.75
Rye [*Schilfroggen*] " "	13.820	47.71	47.13	15.77
Oats [*Rispenhafer*] " "	12.940	37.93	36.90	18.00
Kamtschatka Oats " "	12.710	39.55	40.17	15.26
Barley Flour, from Darmstadt	12.560	64.63	64.18	.....
Jerusalem Barley, from Hohenheim	16.070	42.66	42.03	14.74
Barley, from Hohenheim	13.800	38.62	37.99	17.81
Maize " "	14.960	66.83	66.80	14.68
Maize Flour "	13.359	77.74	.....	13.66
Buckwheat Flour, from Vienna	15.120	65.06	.....	6.89
Buckwheat from Hohenheim	14.120	43.80	44.45	9.96
Einkorn [*Triticum monococcum* ?] Giessen	14.400	55.51	53.76	13.22
Rice, from Giessen	15.140	85.78	86.63	7.40
Beans, from Vienna	13.415	37.71	37.79	28.54
Peas " "	13.430	38.81	38.70	28.22
Lentils, from Giessen	13.110	39.62	40.08	.....
100 parts of the air-dry substances contained in their usual condition—				
Potatoes, No. 1, from Giessen	68.94	23.20	22.80	2.37
" No. 2, " "	74.95	18.14	17.98	2.49
" No. 3, " "	76.80	15.48	16.09	.....

	Water. per cent.	Cane sugar. I. per cent.	II. per cent.	Gluten, Albumen. per cent.
Beet Root	81.61	10.20	10.48	3.03
Mangel Wurzel	82.25	12.23	12.31	2.04

ON PARICIN OBTAINED FROM THE CINCHONA OF PARA.

BY DR. F. L. WINCKLER.

If we digest the bitter resin of the Para cinchona with a strong solution of caustic ammonia for a few days, a brownish-yellow, loose powder, of about half its weight, is precipitated, and the supernatant fluid is clear and deep-brown. The precipitate is coloured *paricin*, which may be easily purified. The ammoniacal liquid on being evaporated, leaves a residue of an amorphous, shining, almost black mass, which contains ammonia.—*Pharmaceutisches Central Blatt.*

ON THE BLUE COLOURATION OF GERMAN SILVER.

BY R. BÖTTGER.

If a perfectly clean, bright polished plate of German silver, of about three or four inches square, be placed in a flat glass saucer, and touched, at any point by a strong zinc wire, whilst at the same time there is quickly poured over it to the height of about three or four lines, a recently prepared, not too concentrated mixture of pure ferrocyanide of potassium and pure chloride of iron dissolved in water, the electro-negative German silver becomes in a few seconds covered with a thin, magnificent blue coating, which though it does not resist a strong friction, yet adheres strong enough not to be removed by mere rubbing with the finger.—*Pharmaceutisches Central Blatt.*

ROYAL INSTITUTION.

The Friday evening meetings were commenced for the season at this Institution, on the 15th of January, when Professor Brande gave a lecture on *Gun cotton.* He alluded to the great interest which had been excited on this subject, and to the claims which had been preferred by different parties for the merit of the discovery. Having described the experiments of Braconnot and Pelouze, which were made many years ago, and an account of which has been already given in this journal, he said that these experiments resulted in the production of a substance differing considerably in properties from gun cotton, and that the latter substance was, undoubtedly, first prepared by Professor Schönbein whilst making some experiments with reference to a substance called by him *ozone.* Professor Schönbein has ascribed the composition $H O_2$ to ozone. He considered that the first hydrate of nitric acid ($N O_5$, $H O$) contained azone, as shown by the following symbol, $N O_4$, $H O_2$; and that a mixture of nitric and sulphuric acids, contained a still larger quantity of the same body $S O_3, H O + N O_5, H O$, being supposed by him to contain $S O_2 + N O_4 + 2 H O_2$. Ozone being a highly oxidizing substance, Professor Schönbein, assuming its presence, as shown above, in the mixture of nitric and sulphuric acids, concluded that such a mixture must possess a highly oxidizing power. He accordingly instituted a number of experiments with the view of determining the action of the mixed acids on organic substances. The mixture which he employed consisted of *one part* by measure of strong nitric acid, and *two parts* by measure of oil of vitriol. He found that if sugar in fine powder be added to this mixture, it is converted into a substance insoluble in water, having considerable resemblance to resin, and, like resin, being soluble in alcohol, and very inflammable. But the most remarkable result of his experiments consisted in the production of the explosive compound called gun cotton, from the action of the same mixture on common carded cotton. The general results of these experiments had been described by Professor Schönbein at the meeting of the British Association at Southampton.

Professor Brande said that whether Professor Schönbein's theory of the constitution of the mixed acids be admitted or not, it could not be denied that some compound was formed in the mixture which did not exist in the acids separately. He (Professor Brande) had satisfied himself of this by a very simple experiment, as follows:—If nitric acid or oil of vitriol be added to a solution of sulphate of indigo or other coloured liquid, no bleaching effect is produced; but if a mixture of the two acids be used, the colour is instantly destroyed.

The remaining part of the lecture consisted of a description of the method of preparing gun cotton, of its properties, and of some of the supposed advantages and disadvantages of substituting it for gunpowder; but as these points have been fully treated of in former numbers of this journal, we omit a further notice of them here.

The attendance of gentlemen denoted the flourishing condition of the Institution, the body of the theatre being crowded, as might be expected, but the ladies' gallery was almost deserted, in consequence of a recent regulation, by which the privilege of the members in this respect is reduced below zero.

BEQUEST TO THE LINNEAN SOCIETY.

The late Edward Rudge, Esq., F.L.S., who died on the 3d of September last, in his will made the following bequest :—

"I give and bequeath to the President and Council for the time being of the Linnean Society of London, the sum of £200, in trust, to invest the same in the names of Trustees, in the purchase of 3 per cent. Consolidated Bank Annuities, and from time to time, as occasion, may require, out of the Dividends thereof, to purchase a Gold Medal, to be called 'The Linnean Medal,' to be awarded by the President and Council of the said Society, at their discretion, to the Fellow of the said Society who shall write the best communication in each volume which, after my decease, shall be published by the said Society, in either of the four departments of Natural History, every such Gold Medal to contain the Profile Bust of Linnæus in his full dress, encircled by his name and the dates of his birth and death on the one side, and the engraved name of the Fellow of the said Society to whom such Medal shall be awarded, encircled by a wreath of the *Linnæa borealis*, on the obverse."

The Council has repeatedly had the subject and terms of this bequest under its serious consideration, and has, after much patient and anxious deliberation, unanimously come to the following resolution :—

"*Resolved*,—That in the opinion of this Council, on a full consideration of the terms of the bequest of the late Edward Rudge, Esq., of the interest of a sum of £200, for the purpose of establishing a Medal 'to be awarded by the President and Council of the (Linnean) Society, at their discretion, to the Fellow of the said Society who shall write the best communication in each volume which after his (the testator's) decease shall be published by the said Society, in either of the four departments of Natural History,' it is inexpedient to accede to the liberal intentions of the testator under the conditions expressed in his will."

"That this Resolution be submitted to a Special Meeting of the Society."

The Council assigned as reasons for coming to this conclusion, That a medal given in the manner directed, would be rather prejudicial than otherwise to the Society's publications, since it would offer no inducement to old contributors, and would not be likely to act as a stimulus to others, and would in all probability create dissatisfaction among the several candidates. No discretionary power being left to the Council to withhold the medal, in case no paper appeared deserving of it, the character of the medal, as well as the reputation of the Society, would be lowered in consequence. Disagreement would be likely to arise respecting the respective claims of the several departments of natural history comprised in the proposal of the testator. It might happen that the best paper was written by a Member of Council, in which case the Council would be obliged by the terms of the will, to award the medal to one of themselves. It was therefore considered advisable respectfully to decline accepting the bequest, expressing at the same time a due sense of the liberality of Mr. Rudge, and regret that the conditions of the will were such as to lead to this conclusion.

At the meeting which was held on the 8th of January, these objections were considered by nearly all present to be valid, and the resolution of the Council was confirmed.

It is to be regretted that the terms of the bequest precluded the possibility of carrying out the wishes of the testator. Besides the objections brought prominently forward, the expense of engraving the die, and the inability to appropriate any of the capital for this purpose, was another obstacle, which could only have been surmounted by a liberal subscription.

NOTICES OF BOOKS RECEIVED.

CHEMICAL RECREATIONS: *a Popular Compendium of Experimental Chemistry for the Use of Beginners.* By JOHN JOSEPH GRIFFIN. Ninth Edition. Richard Griffin and Co., Glasgow, and Tegg and Co., London.

THIS is a popular introduction to the study of Chemistry, intended to provide instruction through a series of experiments. The author says, he "has two classes of readers particularly in view, namely, students attending lectures on Chemistry, and schoolmasters who desire to teach the elements of Chemistry in popular lectures or experimental lessons." To these classes, we think, might be added, that which consists of young men, who, being engaged in occupations involving the practical application of Chemistry, are desirous of acquiring an insight of the principles of the science, but who, nevertheless, have not the opportunity of attending lectures. A large proportion of the apprentices of Chemists and Druggists belong to this class, being generally obliged to obtain from books such scientific knowledge as they acquire. The difference between the work before us, and a systematic treatise on Chemistry, consists in this, that while the latter gives descriptions of principles and results, with comparatively few of the practical details of the processes from which these are derived, the former contains the details which a student requires to be instructed in, to enable him to work out results for himself. Of the value of a work of this kind, if judiciously written, there can be no doubt, and that Mr. Griffin's book has been found useful, may be inferred from the fact of its having reached a ninth edition. It is replete with useful information, conveyed generally in an easy and familiar manner, and the experiments are so arranged, as to convey a connected view of the science to which they relate.

In a book intended as a mere introduction to the study of Chemistry, "for the use of beginners," we think the author would have acted more judiciously in adopting the terms commonly employed, and explaining the views entertained, by Chemists of the highest standing, in reference to the principles of Chemical science, instead of putting forth peculiar views of his own, which are at variance with those generally received. We allude particularly to the article on "The Cause of Chemical Combination," in which the use of the term *affinity*, in connection with the phenomena of combination, is condemned in unmeasured language, and the explanations given in most Chemical works, stigmatized as "mere gossip" and "mystification."

We regret to observe, too, that the author adopts the equivalents calculated from oxygen=100, which are, therefore, all long numbers, difficult to remember; and that he follows the practice of the Germans, in assuming the equivalents of hydrogen, nitrogen, &c. to be one-half those usually adopted by Chemists in this country.—With the above qualification, we have no hesitation in expressing our approbation of the work, which we recommend to practical students in Chemistry and Pharmacy.

Simple Arithmetic *as Connected with the National Coinage, Weights, and Measures* Dedicated to the Lords Commissioners of Her Majesty's Treasury. By **Henry Taylor.** Third Edition. London: Groombridge and Sons, Paternoster Row.

TO CORRESPONDENTS.

Obituary.—On the 16th of December, at 20, Bucklersbury, after two days illness, and forty-four years of faithful service to Messrs. Horner and Sons, Mr. **Thomas Chapman**, aged seventy.

Mr. **Belling** recommends the addition of dried salt of tartar to ether used for inhalation, in order to remove any free sulphurous acid. He has tried it in many cases, and has not found any inconvenience from the small quantity of carbonic acid generated.

I. T.—Starch may be converted into sugar either by the action of one of the mineral acids (sulphuric, nitric, and muriatic) or by oxalic acid. The same result may be produced even more rapidly, by means of diastase, one of the constituents of malt.

"**Glutinator.**"—Dextrine, commonly called British Gum, is the best substance for the backs of labels, &c. It is prepared by the action of heat, or of dilute acids, on starch, the process being stopped before the starch is converted into sugar.

T. F.—Marble may be stained various colours, by applying their respective solutions to it, at a temperature near the boiling point. For a blue colour, solution of litmus or of indigo may be used; for black, decoction of logwood, and sulphate of iron.

E. L.—(1.) We have had no experience in the artificial manufacture of fossils.—(2.) Solution of indigo may be used for staining ivory blue. The air-pump might be useful as suggested in the process.

W. S.—(1.) The particulars of the process for Liquor Opii Sedativus, are still carefully retained secret.—(2.) Citrine ointment when diluted, always loses its bright colour, and sometimes becomes hard; probably on account of the deoxidizing property of the ointment with which it is diluted.—(3.) Glycerin is one of the products of the saponification of fixed oils. In making lead plaster, it may be found in solution in the water used in the process. It is usually obtained by evaporating this water. It has been used as an external application in some cutaneous diseases, and for burns, scalds, &c., for protecting the part from the action of the air.

E. A.—(1.) *Hoblyn's Dictionary of Medical Terms*, published by Sherwood, Gilbert, and Co., Paternoster Row.—(2.) The deposit which occasionally takes place in Tinct. Camphoræ Comp. in cold weather, is probably due to the presence of the camphor and benzoic acid, as well as the oil of aniseed. —(3.) The synonimes alluded to, are useful in referring to foreign works on Pharmacy.—(4.) Strong oil of vitriol applied hot.

Z. Y. Z.—When nitric acid is added to quicksilver, nitrate of mercury is formed, heat being generated. If the quantity of acid be insufficient to dissolve the nitrate, this will remain as a white powder. If there be only sufficient acid to dissolve it while hot, crystals will be deposited as it cools.

A.—(1.) Purple colour for show-bottles: solution of sulphate of copper with ammonia.—(2.) Essence of coffee may be made by percolation, of any strength required, see vol. i., p. 391.

"A MEMBER."—(1.) It is stated that American castor oil is more liable than the East Indian, to throw down a deposit in cold weather.—(2.) Lard oil is not soluble in spirit.

A. D. C. (Windsor).—(1.) Either chalk or soda.—(2.) It is a stupid formula.—(3.) No. 2, is probably the best freezing mixture.—(4.) Soda.—(5.) Common marine soap is made with cocoa-nut oil,—(6.) An amalgam of mercury and gold is sometimes used for stopping the teeth. We believe nothing is so safe and durable as pure gold.

"ÆSCULAPIUS."—*Pereira's Materia Medica* is out of print. A new edition is in the press.

"ʒj."—The examination on Materia Medica is general—not confined to any particular part. A registered Apprentice should write to the Secretary.

We beg to acknowledge the receipt of the Rev. Dr. Wusantoy's communication.

"AN ASSOCIATE."—(1.) The formula given is not correct; the following is the formula of the London Pharmacopœia, 1746, for

BALSAMUM LOCATELLI.

℞ Olive oil, f℥xvj.
Strasburgh turpentine.
Yellow wax, āā ℔ss.
Red Sanders, ʒvj.

Melt the wax with part of the oil over a gentle fire, then add the rest of the oil and the turpentine; afterwards mix in the red sanders (in powder) and stir the whole together until the mixture grows cold.—(2.) For *cold cream*, see vol. iv., page 292.—(3.) For Syrupus Rhei, see vol. iv., page 531.—(4 and 5.) Yes.

M. P. S. (Wilts).—The *compound* powders frequently sold for horse medicines, as powder of aniseed, liquorice, &c., are adulterated in a great variety of ways. No respectable Druggist ought to sell them.

"A SURGEON."—Gelatine, such as is used for making capsules, is generally made from the cuttings of skins, in a clean and fresh state. The dried skins of calves heads, are sometimes used for the finer kinds of gelatine. The inferior capsules, which are sold at a very low price, are often made from common glue.

Mr. WILLIAM HOOPER, of Russell Street, Covent Garden, informs us that the Oleo-resin of Cubebs, described in our last number, is identical with a preparation which he has for some years been selling in capsules, under the name of "Fluid Extract of Cubebs," and which he advertised in the *Lancet* as early as 1840.—[We should at any time have been glad to publish Mr. Hooper's formula, if he had forwarded it, or introduced it at a Pharmaceutical meeting.]

The State of Pharmacy in the North of England.—The following is a *verbatim* copy of an order directed to "Pothecerry hall Newcastle upon tine." We are informed that it is a fair sample of the orders frequently received from a class of persons practising Pharmacy in the north of England:—

"*Bedlingdon, Dec.* 11, 1846.

"Sir I have sent for a Jeneral Statment of the Prices of kimicle goods by weigh—the tinker of ruburb tinker of mer the tinker of cefardis the oil of carr the oil of Rodum the crous of siplment the Price of Ebson Sorlts coster oil and lodnom drops. Please to let me know if you Sell the bottle whose title is gragery's Stumick Pouder and the price of it and the price of ginger. theise goods is to Sell again. this Letter Paid. "JAMES QUARRY."

Advertisements to Mr. CHURCHILL, Princes Street, Soho.

Other Communications to THE EDITOR, 338, Oxford Street, before the 20th of the month.

THE PHARMACEUTICAL JOURNAL.

VOL. VI.—No. IX.—MARCH 1st, 1847.

THE RESPONSIBILITY OF THE DISPENSING CHEMIST.

We remember to have heard an argument between a Lawyer and a Chemist, respecting the comparative responsibility belonging to their two professions. The lawyer contended that the business of the Pharmaceutical Chemist was one of mere routine, a constant repetition of the same or similar operations, which, by habit, become so familiar as to call forth but little mental exertion or anxiety: while he described his own profession as being a constant tax upon the brain, and a never-ending source of anxiety, responsibility, and labour. The Chemist denied this statement altogether, affirming that his cares and responsibilities were quite as great as those of the lawyer. We fully concur in the latter opinion. The dispensing of prescriptions is not a merely mechanical operation, as many persons imagine. It is an occupation requiring a constant exercise of thought, judgment, and experience. Many prescriptions, it is true, are very distinctly written and composed of ordinary ingredients, easily combined. But this is not always the case, and when any doubt or difficulty occurs, the tact and experience of the dispenser are put to the test.

It may happen that a blot has obliterated a word, or the prescriber having been interrupted while writing the prescription, has omitted a quantity, or miscalculated a dose. A not unfrequent source of perplexity is the ambiguity arising from the alterations in nomenclature, introduced into the Pharmacopœia of 1836, a subject to which we have already alluded on former occasions. To this may be added the use of new remedies, and the adoption of formulæ not recognised in our Pharmacopœias. These circumstances, without mentioning the peculiarities in handwriting observable in prescriptions, require the utmost vigilance and judgment on the part of the Chemist, whose duty it is to fulfil to the letter the intentions of the prescriber.

In the event of any doubt arising, the first and most important duty of the Chemist is to guard against any possible injury to the patient. He ought to be acquainted with the ordinary doses of all *recognised medicines*, and if in any case he should observe that the dose prescribed is such as might endanger life, he would incur responsibility by preparing the prescription.

In such a case it is his duty to call upon the author of the prescription to inquire whether such a dose was intended. It may happen that the particular constitution or condition of the patient required an unusually powerful remedy; if so, the Chemist will incur no blame for taking the precaution. But if it should be found that an oversight had occurred in the prescription, the importance of rectifying the error is obvious.

Care should be taken not to alarm the patient by mentioning the existence of any doubt as to the accuracy of the prescription: this would tend to lessen his confidence in his medical attendant, and the exposure could not be attended with any advantage. We have heard of an instance in which a Chemist observed to a patient, "Are you aware that if you were to take this medicine you would be poisoned?" Similar remarks have been made by medical men respecting Chemists. Such observations are highly injudicious. A Chemist is not justified in making comments on prescriptions which are brought to him to be prepared: such criticism is impolitic, as well as unbecoming. In case of an oversight the patient should simply be told that the medicine cannot be ready for two or three hours, allowing time for seeing the prescriber. But it sometimes happens that the prescriber cannot be found; he may be out of town, or the bearer of the prescription may be unable to state who wrote it; or the medicine may be wanted immediately, and the patient may refuse to leave the shop without it. Under these circumstances the last resource is to state that it is necessary to make an enquiry before the prescription can be prepared, without enlarging on the nature of the supposed error.

Foreign prescriptions and obsolete formulæ may be mentioned as an occasional source of difficulty; for, although the composition of such formulæ may be known, it often happens that they require several days for their preparation, or that some of the ingredients cannot be procured. For instance, an ounce or two of a preparation may be ordered consisting of a dozen or twenty ingredients, which are to be macerated for a fortnight. The patient is leaving town, and insists upon having the medicine immediately in some form or other. In such a case a full explanation is absolutely necessary, and this having been given, the responsibility is thrown on the patient, who can give such orders as he may think proper.

Sometimes patients copy prescriptions, and not understanding the Latin terms mistake drachms for ounces. We have seen such copies which had been traced on a sheet of paper from the original against the window; and others copied from some medical work, and containing very serious blunders. In all these cases a moral responsibility rests on the Chemist, who is a guardian of the public health, and is therefore bound to take every precaution to prevent any injurious result.

Another liability to accident arises from the use of new remedies of indefinite or varying strength, the doses of which are not accurately determined, nor their precise properties ascertained. In testing the value of a new remedy or combination, medical practitioners occasionally direct a Chemist to prepare it according to some definite formula. Sometimes the suggestion emanates from the Chemist, and is adopted by the medical man. It should be an invariable rule in prescribing such medicines to state on the prescription whose preparation is intended, or where it may be obtained. It would be better in every instance to give the formula, but this is not always practicable so long as members of the profession countenance proprietary nostrums—such as pulvis jacobi, liquor opii, liquor taraxaci, &c.

A flagrant abuse in the profession connected with this subject, is the adoption of secret formulæ, arranged between medical men and Chemists, from mercenary motives. We sometimes see such forms as the following: Mistura rhei co., Pilula stomachica, Pulvis aperiens, &c., &c. These are strong indications of the per-centage system, which, for the credit of the profession, ought to be exposed and discountenanced. Some of our readers may probably doubt the existence of such a system, but we are in possession of evidence which admits of no dispute. A physician prescribes gratuitously for poor patients, directing them to take the prescriptions to a certain Chemist, who agrees to hand over a per-centage on the amount received for the medicine.* We understand the usual per centage is one-half. In order to oblige the patients to go to the right shop, secret formulæ are adopted. But it sometimes happens that patients have a preference for some other Chemist, who, on being applied to, is obliged to confess his inability to prepare the medicine. When this trick is played upon patients who have paid fees, they are naturally indignant, and consider it an imposition. Undoubtedly, if a patient pays a guinea for a prescription, he is entitled to receive one which can be prepared by any respectable Chemist. In the case of the poor, the operation of the per-centage system is obvious, since the quantity of medicine ordered, and the amount charged for it, must be sufficient to remunerate both the prescriber and the dispenser; and this amount is obtained under the cloak of benevolence and gratuitous advice.

Hospital patients sometimes bring their prescriptions to Chemists, observing that they would rather pay for the medicine than lose their time by waiting for it at the hospital. As these prescriptions generally contain private formulæ, the only plan the Chemist can pursue, is to apply for a copy of the hospital Pharmacopœia, which is generally printed. In the absence of this key to the formula, he must decline to prepare the prescription.

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* The following advertisement appeared in *The Lancet* of January 2:
"To Physicians and Surgeons.—A Chemist in the West-end wishes to enter into an arrangement with a Physician to dispense his prescriptions, on advantageous terms.—Address by letter, pre-paid," &c.

Some medical men who are in the habit of writing prescriptions, also keep "dispensaries," and employ private formulæ. Whenever such prescriptions are delivered to the patients, they should be explicitly told to go to the "dispensary" and to no other shop. A verbal caution is scarcely sufficient. The caution should be distinctly written on the prescription, otherwise it is liable to be forgotten or misunderstood. The recent fatal accident at Camden-town, arose from the following combination of circumstances:

A prescription was written in which two nostrums of the prescriber were ordered, viz. "Aqua amygdalæ amaræ" and "Pulv. strychniæ comp." The former name is applied in the trade to the distilled water of bitter almonds, sold by the manufacturers of the oil, which is a concentrated water used only as an external application. But the term was used by the doctor to designate his own preparation, made by adding three drops of oil of bitter almonds to a pint of water. The patient sent the prescription to a Chemist, who being unacquainted with either of the above nostrums, sent a messenger with orders to obtain them of some other Chemist. One of the parties applied to had been in the habit of supplying the commercial aqua amygdalæ amaræ, and the party who ordered it being a Chemist, he executed the order according to custom, not having the least idea that the water was intended for internal administration. Aqua amygdalæ amaræ having been prescribed by a medical practitioner, and obtained from a respectable Chemist, was employed without hesitation in preparing the prescription. Unfortunately the article used differed in strength from that of the nostrum intended, respecting which no instructions were given in the prescription. This accident would not have occurred if the patient had been aware that the prescription could only be prepared correctly at the dispensary of the prescriber.

The case of Mr. Hooper is another illustration of the responsibility of the Chemist. It appears that his liability does not end with the preparation of the medicine; he must keep his eye on his customer until the draught is conveyed out of the shop. It is not sufficient that the medicine is properly labelled. A customer abstracts a bottle on which is written "The drops, 1*s.* 4*d.*," instead of a draught, for which fourpence had been paid. If a similar occurrence were to take place in the shop of a jeweller, a jury would scout the idea that the young man had given the wrong trinket. But the article in question being *medicine*. this very improbable story is believed, the Chemist is fined £150, and the person who forced the medicine down the throat of the unfortunate patient, knowing that it was labelled "The drops," and knowing that drops are always taken in small quantities, escapes almost without censure.

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* See page 436. † See page 437.

PATENTS FOR SURGICAL OPERATIONS.

SOME degree of surprise has been excited in the profession by an announcement recently put forth by a Mr. Dorr, to the effect that on behalf of Dr. Jackson and Dr. Morton, of Boston, he has secured a patent for the inhalation of ether during surgical operations.

We have received from the above-named gentleman a printed circular, containing a defence of the patent right, with an intimation that the patentees are willing to withdraw their claim if a suitable consideration should be offered.

The document is a curious specimen of ingenious logic. It commences as follows :—

> " So long as patent laws exist, they should be respected. If they be inexpedient, they should be abolished.
>
> " To affirm that a patent ought not to be granted, in a case in which the laws allow it, is to assume the province of legislation, and to dictate to parliament.
>
> " If the skill and ingenuity displayed by the inventors, and the novelty, simplicity, and utility of the invention, be just titles to public reward, then upon each and all of these grounds, the inventors of the Letheon present the strongest claims.
>
> " They are inventors, not merely discoverers ; discovery is the new observation of a fact ; invention is the rational and new adaptation of means to an end ; and, in matters of equal importance, the inventor is superior to the discoverer, by as much as reason is superior to perception.
>
> " Means of procuring insensibility to pain by a safe and certain method have long been a desideratum in the medical and surgical profession. The Letheon supplies that desideratum. No invention of any time exhibits in a more distinct light that high faculty of human reason, the adaptation of means to a desired end.
>
> " Dr. Jackson and Dr. Morton, of Boston, are, therefore, entitled on every account to stand in the front rank of the benefactors of mankind."

The Author proceeds to reply to the arguments which have been urged against the patent :—

> " But it is said the invention is *too* simple, *too* useful, *too* nearly universal in its application to be made the subject of a patent. If this argument be good for any thing, it would follow that the less simple, the less useful, and the more restricted in its application an invention is, the better subject it is for a patent."

This is a *non sequitur*, as it would imply the non-existence of a proper medium between two extremes.

Mr. Dorr settles the legal part of the question in a summary manner, by affirming that—

> " If the patent for the Letheon and Lethionic apparatus be not good at law, then the law of England concerning patents, as expounded by the courts, and settled by precedent, is a delusion and a snare."

Shifting his ground, he proceeds—

"But the question is not one of law or of patents, of technicalities or of quibbles; it rests upon higher and broader grounds, it is founded in *Equity* and *Honour*."

This is followed by an appeal to the justice and liberality of the British public, who are called upon "cheerfully to concede as a favour" that which the patentees have secured "the power of demanding as a right"

"Shall an Arkwright assess millions for an improvement in the spinning-Jenny, and shall reward be grudged to those who have disarmed the 'knife' of its terrors, and converted it into an instrument of unmingled beneficence?"

This remarkable compound of threats and magnanimity is rather difficult to handle, as it places us in doubt whether the parties concerned are to be considered in the light of tradesmen driving a bargain, or members of a liberal profession who place themselves and their invention at the disposal of their brethren and the public. In the latter case, we should feel no hesitation in advocating the appropriation of a suitable reward to the inventors of what appears likely to become a most extensive means of alleviating suffering. But, the legal question having been raised, we must first discuss the merits of the patent. We understand that the patentees do not claim the invention of any apparatus in particular, nor the discovery of the sedative properties of ether when inhaled, but they claim the adaptation of this inhalation by means of any apparatus to the alleviation of pain during any surgical operation. The practice of administering a sedative before an operation is of ancient date. Ether has long been in use as a sedative. More than twenty years ago it was inhaled to alleviate pain. It has long been known that persons under the influence of the vapour of ether were more or less insensible to pain. We have, many years ago, seen persons under this influence strike themselves violently against furniture and against iron doors, producing contusions from which they suffered for days, although at the time they were unconscious of any injury.

These facts possess no novelty; but it does not follow as a *necessary* inference from these facts that surgical operations could *safely* be performed during this temporary state of comparative insensibility. However natural this inference might appear, another and a more impressive inference was likely to occur to the mind, namely, the fact that a fatal result after such an experiment would in all probability be followed by a coroner's inquest and a verdict of "manslaughter."

To Drs. Jackson and Morton belong the credit of having had the courage to incur this responsibility—of having discovered that this well-known sedative may be used without danger in surgical operations. If the experiment had occasioned the death of the patient operated upon, the doctors might have been amenable to the law. The result having been satisfactory, they are not only exonerated, but entitled to the thanks of the public, and to such a reward as may with propriety be awarded to them; consistently with their character and position as members of the medical profession. If it be consistent with this character and position to secure a patent for the inhalation of ether during operations, it would be equally so for a Surgeon to secure a patent for an improved method of operating, or for a Physician to secure to himself the exclusive administration of a new remedy.

But such a proceeding on the part of a Physician or Surgeon would be an act of self-degradation, a sacrifice of professional character for which no mercenary consideration could make amends.

We are therefore inclined to hope that Mr. Dorr has exceeded his instructions, and that the threats of legal proceedings, for infringement of the patent, are a libel on the characters of Drs. Jackson and Morton. From all the accounts that we have heard from authentic sources respecting these gentlemen, we believe them to be incapable of any action derogatory to their position as members of the profession.

Mr. Dorr has issued the following instructions respecting what he terms the

LETHEONIC APPARATUS.

I feel it to be a duty to inform the Medical and Surgical Profession, and the Public in general, that in order to insure the *safe* use of the Letheon, certain conditions rigorously are necessary in the apparatus employed.

It is possible *to strangle instead of letheonising*, and I would therefore urgently advise every operator, whether licensee or infringer, to be *careful that all the air-passages of the apparatus used be of large diameter, sufficient to allow of perfectly free and easy respiration through the apparatus*. This diameter should not be in any part less than three-eighths of an inch bore, and particular attention should be given that there is no obstruction to the free circulation of air or vapour through the valves.

I regard the practice of compressing the nostrils of a patient, by means of a spring or other instrument, as highly dangerous and improper. The nostrils should be closed by the fingers of a prudent and experienced person. *Asphyxia and Etherisation are two very different things.*

It is trusted that no one will be so ungenerous or so unwise as to construe this information, which is communicated from motives of humanity, into an abandonment of any lawful claim.

James A. Dorr,
Agent for the Proprietors of the Letheon.

London: 18, *Duke-street, St. James's,*
January 30*th*, 1847.

TRANSACTIONS
OF
THE PHARMACEUTICAL SOCIETY.

ABSTRACT OF A LECTURE
ON THE APPLICATIONS OF ELECTRICITY TO PRACTICAL PURPOSES.

BY PROFESSOR E. SOLLY, F.R.S., ETC.

The object of this lecture was to describe the properties and powers of electricity, and the various ways in which those powers are now employed in the arts and manufactures. The lecturer commenced with a brief sketch of the different sources of electricity, as included under the heads of frictional, chemical or galvanic, animal, thermo, and magneto electricity. The electricity of steam, and also atmospheric electricity, being classed with ordinary or frictional electricity. The points of resemblance, and the differences which exist between these several varieties of electricity, were then adverted to, particularly those remarkable variations which are caused by modifications in its quantity and intensity, and the distinctions which exist between the effects of statical and those of dynamical electricity. The peculiar circular condition necessary to most of the effects of chemical, thermo, and magneto electricity was also pointed out, and illustrated.

The effects produced by electricity were classed under the following heads:—1. Chemical decompositions; as distinct from those cases of mere conduction, in which the power is transmitted without any chemical change being produced in the substance through which it passes, and insulation in those substances which do not conduct it at all; circumstances depending wholly on the nature of the substance itself, as all the varieties of electricity are able to effect the decomposition of certain compounds.—2. Magnetic effects—a current of electricity when passing through any substance, is able to produce certain effects in a magnet free to move, in its vicinity; and tends to produce a certain amount of magnetism in any substance capable of assuming that state, near which the current passes.—3. Muscular contractions, or shocks, which are felt when electricity traverses any part of the animal frame. —4. Luminous effects—electricity of every kind producing more or less light when traversing a badly conducting medium, such as the air.— 5, and lastly, Heat. All five varieties generating heat, when passing through portions of conducting matter of limited capacity or size, in relation to the current.

Whilst describing the effects produced by the several varieties of electricity, the various contrivances for obtaining and exalting these effects were also mentioned; of these the most expensive, and therefore, in some respects, least convenient, were voltaic batteries, because in them there was always a considerable expenditure of various chemical agents, and they consequently continually required renovation. The most economical sources of electricity were heat and magnetism. In the magneto-electric machine no substances are dissolved or acted on, a small exertion of mechanical power only being required in order to obtain a certain, constant, and unvarying current of electricity.

In thermo-electric arrangements neither chemical action nor mechanical power was required; but only inequality of temperature, a condition easily obtained and kept up; a tolerably constant current of electricity might be obtained by taking advantage of the ordinary atmospheric variations of temperature—the warmth of the sun, underground heat, &c. In these cases, however, of course the quantity of electricity obtained must necessarily be small compared with what is obtained in ordinary chemical or voltaic arrangements. As the most powerful and abundant source of electricity of low tension, the voltaic battery deserved some attention, and all conditions which tended to exalt its power, or diminish the waste generally going on, were worthy of study; accordingly the various stages of improvement made in the pile of Volta were described, including the modifications of Cruikshanks, Wollaston, Daniell, and Grove; to the latter two being due the credit of having experimentally investigated the laws which influence the action of the battery, and the circumstances which interfere with its constancy and power.

Mr. Solly then proceeded to consider the various practical applications of electricity, more especially as a source of light, heat, chemical action, and magnetism. He stated that the brilliant light afforded by the electric discharge had, at various times and in many different ways, been attempted to be employed as a source of artificial illumination, though hitherto with but very partial success; one great obstacle had been the expense, which was always far greater than that of ordinary sources of light. Still from the fact of the light being quite independant of a supply of air, &c., it might probably ere long be used advantageously in certain situations.

As a source of heat, electricity had been employed with very great advantage for many years. By passing a current of electricity through a fine platinum wire, heat might be evolved at pleasure, in situations where no other source of heat was so applicable; it was thus employed by Mr. Pepys in his experiments on the nature of the diamond; and subsequently, for similar purposes, by M. Becquerel. The common detonating eudiometer, Volta's inflammable air-lamps, and Newman's instantaneous light apparatus, were illustrations of the same kind, but by far the most important application of the heating power of electricity, was for mining purposes. It was shown by Cavallo, that charges of gunpowder might be conveniently fired by powerful discharges of common electricity; and this fact, which was attempted to be applied to practice by Mr. Shaw, in America, about 1830, led Dr. Hare to employ galvanic electricity for this purpose, and since the publication of his experiments, it has been adopted for firing charges of powder in all parts of the world, and has effected a complete change in the system of blasting, because in blasting by electricity, any number of charges can be fired simultaneously, in any situation, and with a degree of accuracy and perfection wholly unattainable by the old mode of firing.

Some of the chemical effects of electricity were familiar to every one, as in fact attention was first drawn to the study of voltaic electricity, in consequence of the brilliant chemical discoveries, such as the decomposition of the fixed alkalies and earths, by Davy, in 1807. The chemical effects of electricity were divided into three heads: simple effects of decomposition, as in the case of the alkalies just referred to;

effects in which chemical affinity is controlled or counteracted, as in the protection of metals from oxidation; and secondary chemical effects or those due to the powers of nascent substances when at the moment of evolution from some compound. Under the last head, were included all those very beautiful applications, which, originating in the independent discoveries of Jacobi and Spencer, have constituted the new arts of electrotype, electroplating, &c. These arts seem mainly dependent upon the facility which electricity gives us, of decomposing water at pleasure, and evolving nascent hydrogen from any conducting surface in a metallic solution; nascent hydrogen having the power of instantly reducing or precipitating in the metallic state, most of the ordinary metals. New chemical applications of electricity were constantly discovered, and the whole subject might be said to be yet undeveloped.

The last class of electric effects, and those to which attention was more particularly directed, were the magnetic; because the medical effects of electricity, the phenomena of the shock, and the production of muscular contractions, though highly interesting, and probably hereafter leading to important applications, was so little understood, that it could hardly be properly classed with the practical uses of electricity.

The important discovery of Oersted, of Copenhagen, in 1819, which resulted from a long and laborious investigation into the relation of electricity and magnetism, presented to philosophers a most valuable instrument, the galvanometer, in which a magnetic needle placed free to move in a rectangular coil of wire, and therefore exposed many times over to the influence of any current of electricity which is passed through the wire, gives an accurate and delicate indicator of the existence, direction, and force of a current. The phenomena observed not long after this discovery, led Sir H. Davy and M Arago to remark the magnetising powers of electric currents, and consequently to discover the mode of making magnets by currents of electricity. These two important discoveries led to various valuable practical applications, and will, probably ere long, lead to many more.

The great amount of mechanical force obtained through the agency of electro-magnets, by means of comparatively small electric currents, soon led to the idea of employing it as a motive power. In the experiments of Professor Henry and Dr. T. Eyck, of Albany, in 1831*, a bar of soft iron, three inches thick, and thirty inches long, and weighing sixty pounds, was made so powerful a magnet by a current of electricity transmitted through a copper wire coiled round it, as to be enabled to raise a weight of more than 2000lbs. The great obstacle to the employment of this power as a source of mechanical force, is the very small distance through which the attractive power of the magnet is able to act, nevertheless, a number of very ingenious arrangements have been proposed, in many of which a considerable amount of power is obtained by the action of a comparatively small galvanic battery. The principle adopted in the majority of these, was, that of a series of electro-magnets, which could be successively brought into action, the current being alternately sent through the coil of wire surrounding each horse-shoe, and the contrivance requisite to effect this change, being moved by the rotating machine itself. In some, a small permanent steel magnet was caused to rotate by the alternate attraction and expulsion of a series of electro-magnets, alternately called into action by its own rotation. In others, power was obtained by the alternate attraction of a piece of soft iron, properly suspended between the poles of two electro-magnets. One of the most ingenious of the many different machines of this sort, was that of Professor Wheatstone, in which curved pieces of soft iron, arranged excentrically upon a wooden disk, were successively acted on by electro-magnets, which were thrown out of connection with the battery, as soon as the wooden disk in its revolution had brought the extremity of the curved piece of iron as near as possible to the magnet; when the current being transferred to the next magnet, gave to it the attractive power.

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* Silliman, xix. 408, xx. 201.

The rapidity with which electricity traverses great lengths of conducting matter, coupled with the power which it possesses of deflecting electrometers and galvanometers had, at an early period, led to the idea of employing it as a means of conveying signals from place to place, and this system had within the last few years been brought to such a degree of perfection, as to render it more than probable, that ere long it would supersede all other modes of conveying intelligence, not merely for telegraphic purposes, but also for many other similar and not less important uses.

The first electric telegraph appears to have been made about the year 1786; though long before that time the vague idea of a magical magnetic telegraph appears to have been entertained, for the Roman Jesuit Strada, who lived in 1572—1649, in a curious book, dated 1617, entitled *Prolusiones*, describes a fabled contrivance of two magnetic needles, attached to dials, bearing a circle of letters, and which possessed the property of always indicating the same letter; so that when one needle was made to point to any particular letter, the other needle, however distant at the time, placed itself so as to point to the same letter; an account of this curious idea will be found in the *Spectator*, 241, and *Guardian*, 119. The first real attempt, however, which seems to have been made, to render electricity available for the transmission of signals, was that of M. Lomond seen by A. Young, in 1787, and described by him in his *Travels in France*, i. 65. Speaking of the inventor, he says, "In electricity he has made a remarkable discovery. You write two or three words on a paper; he takes it with him into a room, and turns a machine inclosed in a cylindrical case, at the top of which is an electrometer, a small pith ball; a wire connects with a similar cylinder and electrometer in a distant apartment; and his wife, by remarking the corresponding motions of the ball, writes down the words they indicate . . . the length of the wire makes no difference." This telegraph, however, like most of those which succeeded it for many years, appears to have been little better than a philosophical toy.

In *Voigt's Magazine*, 1794, p. 183, there is a letter from M. Reusser in which he describes an electric telegraph. In this contrivance a number of strips of tinfoil were fastened on to a glass plate, each strip having a different letter marked on it, and connected by carefully insulated wires inclosed in glass tubes, with a corresponding glass plate at a distance. Thus there was a separate wire for each letter, and one return wire for the whole series; and signals were transmitted by sending electric shocks through the different wires, and noting down the letters attached to the strips of tinfoil, where the sparks were observed. The attention of the observer at a distant station was drawn by firing an inflammable air pistol, attached to the apparatus, by means of an electric spark.

The publication of accounts of this telegraph caused Cavallo to insert in the fourth edition of his *Treatise on Electricity*, 1795, a short account of some experiments which he had made on the transmission of signals; the most important of those consisted in firing gunpowder and inflammable air, by electric sparks, at a distance of a few hundred feet. He adds, that the same might possibly be done at a distance of two or three miles, and even at a much greater distance.

In *Voigt's Journal* for 1798, p. 61, there is a short notice of an electric telegraph, invented by Dr. Salva, in Spain; the nature of his apparatus is not described, but it is stated, that the Infant Don Antonio had taken a deep interest in the invention, invited Dr. Salva to court, presented him to the king, and occupied himself with experiments on the subject, together with Dr. Salva; and according to Humboldt, as quoted by Gauss, (*Resultate* ii. 14) a telegraph of this kind was established in 1798, from Madrid to Aranjuez, a distance of twenty-six miles.

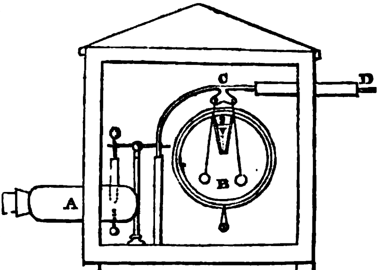
Previous, however, to the publication of these inventions, a number of experiments had been made, as to the transmission of electricity, through considerable length of metallic wire, water, and even soil. In 1729, Mr. Grey and Mr. Wheeler observed the instantaneous discharge of electricity through some hundred feet of wire. In 1746, Winckler at Leipsig, and Nollet and Lemonnier at Paris, made numerous experiments on the transmission of electricity through water, earth, &c.; in one case, wires of more than two miles in length being employed.—*Philosophical Transactions*, 1746. In July, 1747, Dr. Watson, together with several other electricians, ascertained the passage of electricity through water, by sending shocks across the Thames; experiments which they subsequently repeated on a still larger scale on the New River, at Newington; and in August, 1747, they transmitted shocks through two miles of wire, and two miles of earth, at Shooter's Hill. The passage of electricity through water excited a great deal of interest, and these experiments were repeated in 1748, by Franklin, across the Skuylkil, at Philadelphia; and in 1749, by De Luc, across the Lake of Geneva.

After the discovery of galvanic electricity, similar experiments were made on the transmission through water and soil. In 1803 experiments were made by F. H. Basse, on the Weser, a distance of 4000 feet being included in the circuit (*Gilbert's Annalen*, xiv. 26); by Erman, in the Havel, near Potsdam (*Gilbert*, xiv. 385); and by Aldini, at Calais, across about 200 feet of sea water. Notwithstanding these experiments, however, the earliest galvanic telegraph was that of Sömmering, in 1807 (*Münchner Denksch. der R. Akad. der W.*, 1809, 1810, p. 401). In this, a series of gold pins, each corresponding to a different letter, and immersed in a glass trough full of water, were employed; any one of which could be at pleasure connected with the battery, while the circuit was completed by a single additional wire In this arrangement, the decomposition of the water, and the evolution of gas from the different pins, supplied the signals.

The next electric telegraph in the order of dates was that of Mr. F.

Ronalds, who in 1816 constructed a telegraph, by means of which he was enabled to send signals with considerable facility and rapidity, through a distance of eight miles, using frictional electricity. This plan was very simple; at either end of the wires was a clock carrying a light paper disk, on which were marked the letters of the alphabet, certain words, and numbers; by means of a perforated cover only one letter and figure was visible at a time, and as the clock continued to go, every letter in turn was presented to view at the aperture. As the clocks kept accurate time, it is evident that the same letter would always be visible at both clocks, and therefore that if an electric discharge were sent from one station to the other, when a particular letter was exhibited on the dial, the observer at the other station would readily know the signal intended. The wires were buried underground in dry and well insulated glass tubes; the attention of the discoverer was at the outset drawn to the instrument by an inflammable air-gun fired by an electric spark, and the subsequent signals indicated by the divergence of two small pith balls suspended in front of the revolving disks. Fig. 1 shows the form of the apparatus used at either end of the telegraph; *A*, the air-pistol; *B*, the dial exhibiting one letter only through a slit; *C*, the pith-ball electrometer; *D*, the conducting wire. This telegraph was either used to indicate single letters, or by reference to numbers, and an ingeniously contrived dictionary, it was made at once to refer to words or sentences.

Fig. 1.



In 1820 M. Ampere, in consequence of a suggestion of La Place, was led to devise an electric telegraph, which however it does not appear that he carried out practically (*Ann. de Chim. et de Phys.* xv. 73.) This plan was to have a number of magnetic needles, one to indicate each letter, and to deflect these by currents of electricity through wires, connected by means of keys with a voltaic battery at a distance, each key, which brought into action a different magnetic needle by transmitting the electric current through the wire belonging to it, being marked with the same letter as the needle which it influenced; in this way, he observed, it would be easy to form a "sort of telegraph."

Dr. Ritchie, in a lecture at the Royal Institution in 1830, endeavoured to illustrate this suggestion of Ampere, and exhibited a model of a telegraph constructed after his description; the arrangement was however very complex from the number of wires, &c, and Dr. Ritchie does not seem to have been sanguine as to the ultimate practicability of the scheme (*Journal of the Royal Institution*, 1830, p. 183). A scheme somewhat similar to that of Ampere was proposed by Fechner in 1829 (*Lehrbuch des Galvanismus*, 269). Shortly after this Professor Wheatstone made a beautiful series of experiments on the velocity of electricity, in which he was enabled to prove that a current of frictional electricity traverses a copper wire with about the same velocity as light traverses space, namely, nearly 200,000 miles in a second. An account of these experiments was published in the *Philosophical Transactions* for 1834. These experiments drew Mr. Wheatstone's attention particularly to the subject of electric telegraphs, and led him eventually to the very remarkable arrangements which will be immediately described.

In 1833 an electro-magnetic telegraph far more simple than that of Ampere was devised and actually constructed at Göttingen by Gauss and Weber, philosophers to whom the science of magnetism is deeply indebted. In this telegraph only two wires, and one heavy magnetic needle, or rather bar, were employed; the number of signals which could be transmitted was small, and the time occupied by each considerable. (*Göt. Gel. Anz.* 1834, 1273.) This telegraph was improved and still further carried out by Steinheil of Munich, who in 1837 constructed a telegraph from Munich to Bogenhausen, a distance of about five miles and a half. He employed only one wire, completing the circuit through the earth; and in place of a voltaic battery, used a powerful magneto-electric machine. The indicator consisted of two heavy magnetic needles, suspended in galvanometer coils, and which when deflected by the electric current struck against small bells, or by means of pens charged with ink, and attached to the ends of the needles, made marks on paper slowly drawn by machinery over rollers—thus two distinct classes of signals might be sent: those dependent on the different toned bells struck, and those caused by the number, position, and arrangement of the little dots of ink, marked on the moving sheet of paper. (*Sturgeon*, 1838).

Even before the first telegraph of Gauss and Weber, however, it would appear that Baron Schilling had occupied himself with an electro-magnetic telegraph. The Baron, who was attached to the Russian embassy at Munich, at the time when Sömmering was engaged with his galvanic telegraph already described, was much interested in the experiments of the latter, and shortly after Oersted's discovery of the deflection of the magnetic needle, Schilling was led to devise an electro-magnetic telegraph. An improved form of his instrument was exhibited at the Bonn meeting of naturalists, by Dr. Munke in 1835 (*Isis*, No. 9, 1836), and is described in detail in *Gehler's Physikalisches Wörterbuch*, 1838, vol. ix., 3. In this instrument light disks of cardboard attached to magnetic needles enclosed in galvanometer coils, are moved by the galvanic or magneto-electric current. Five similarly prepared magnets, arranged so that the round disks of cardboard were only seen edgeways, were connected by wires with the distant source of electricity; according to the direction in which the current was sent, the magnet was deflected to the right or to the left, in the one case showing to the observer the one side, in the other case the reverse of the cardboard disk—thus ten separate signals were obtained, which by reference to a telegraphic dictionary, readily gave any required number of signals.

As has already been said, Professor Wheatstone's attention had been directed to the subject of electric telegraphs in consequence of his experiments on the velocity of electricity; and having matured his plans, he took out a patent in June, 1837, in conjunction with Mr. W. F. Cooke, a gentleman who had also, and independently, paid much attention to the subject of conveying signals by electricity. The principle on which this telegraph depended, which was the first to be practically employed, was that of combining several peculiarly constituted galvanometers together, so as to produce a number of distinct signals. In the most convenient form of telegraph of this sort, a "signal board" was employed, having five vertical galvanometers with double needles, the lower end of each being slightly the heaviest, so as to ensure at all times a vertical position, except when deflected by the current from the ends of these needles, lines were drawn both above and below, as in fig. 2, and at the points where these lines intersected, letters and numbers were placed. When an electric current was transmitted so as to deflect at the same time two of the needles, they indicated by their convergance one or other of the letters marked on the signal board. Thus if the first and fifth needle converged above, they pointed to *A.*, if below to *Y.*; or if the first and fourth converged above they dicated *B.* and so on. A signal board of this sort was placed at either end of the line of telegraph, having a battery and keys so arranged as to render it easy to deflect at pleasure any of the five galvanometer needles at the distant station: the two sets of galvanometers being connected by six wires, one for each separate needle, and one as a return common to them all. The keys used to connect these wires with the battery were very simple, and at the same time perfectly efficient; the arrangement consisted of five copper bars, thin enough to be elastic, fastened to a cross piece of wood, as at *A.*, fig. 3, and connected with the five wires of the telegraph, whilst their other ends pressed slightly, but so as to be in good metallic contact, against a cross-piece of copper *B.* The terminal wires of the voltaic battery were attached to two small bars of metal, *C.D.*, and in the five longer bars just where they crossed the battery bars, *C.D.*, there were a row of small metal pins terminated with little ivory knobs. When it was desired to deflect any of the needles in the signal boards, all that was necessary was to press the ivory knobs above those bars, in connection with the needles to be deflected; the slight pressure, by bending down the bars, insulated them for the time by breaking the contact at *B.*; and the metal pins, by coming in contact with the cross bars, *C.* and *D.*, became connected at once with the battery. By this simple and beautiful arrangement, the keys, though always ready for immediate use in sending a signal, were not any obstacle to receiving one, as the bar *B.* always completed the circuit of all the wires, except at the moment of using the telegraph, and then by the contrivance just described, it was thrown out of connection.

FIG. 2.

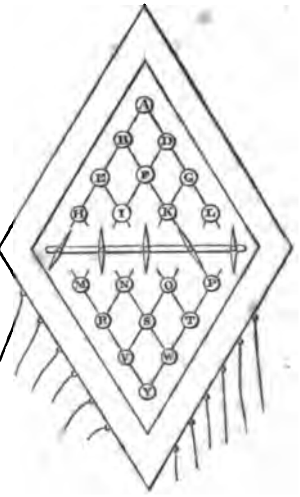
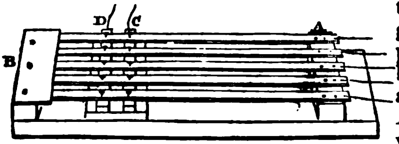
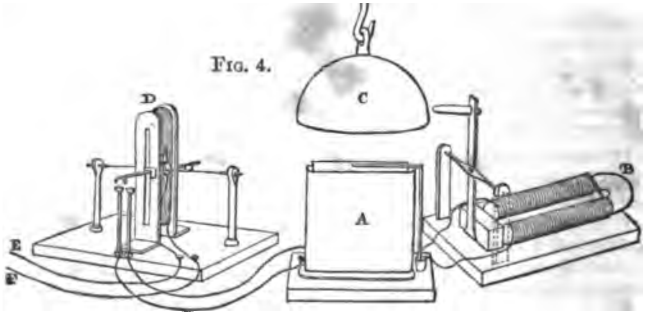


FIG. 3.



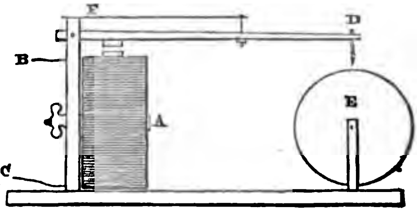
There were, of course, many minor details, and special arrangements of great importance, as regards the practical working of the telegraph; such as the insulation of the wires, the strength and form of battery, &c. These however need not be adverted to in a brief sketch like the present; but there was one point of the most vital importance to the use of the instrument, which deserved a more minute description, and that was the alarum. In order that the telegraph could be practically used, it was essential that some good and simple means should be devised for drawing attention at a distant station when a message was about to be transmitted. In order to overcome the difficulty presented by the very small amount of power which would be transmitted to a long distance, and which was not sufficient to make an electro-magnet of any power, and thus discharge an alarum or otherwise give notice, several ingenious contrivances were adopted. The following was one of the simplest and most effective. A second battery was placed at the distant station, having wires connected with a powerful electro-magnet attached to an alarum, or arranged so as to strike a bell as soon as the battery was brought into operation; an interruption however being made in part of the circuit, the battery though charged with acid, and therefore ready to act, could not exert its magnetising power on the electro-magnet unless the circuit were completed. The current of electricity from the distant station, from whence the intelligence was to be transmitted, though not powerful enough to make an electro-magnet, was abundantly powerful enough to complete the circuit of the second battery, thus waiting to be called into action. This was effected by a small piece of copper wire attached to a cross piece, fastened to a delicately suspended vertical galvanometer; when the latter was deflected by even a feeble electric current, the upper wire by having its ends plunged into two cups of mercury, completed the circuit of the secondary battery, caused the electro-magnet to attract its keeper, and thus let off the alarum or rang the bell. The general form of this arrangement is represented in fig. 4, where *E*, *F*, are the wires conveying the electric current from the distant station; *D* the vertical galvanometer deflected by its influence; *A*, the secondary battery thus brought into action, and *B* the electro-magnet which is made to act on the bell *C*.

FIG. 4.



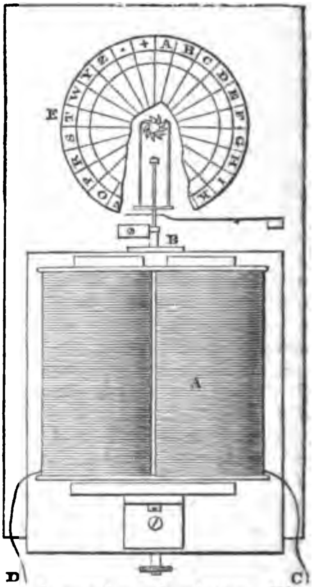
Whilst the admirable telegraph of Wheatstone and Cooke was exciting a great deal of interest in England, and indeed all through Europe, Professor Morse, of the New York City University, published accounts of an electro-magnetic telegraph, which also attracted much attention. It is stated that his telegraph was first devised about 1832, though the earliest printed notice of it appeared in April 1837, in the New York Papers (*Silliman*, xxxiii., 185). The idea of this telegraph appears to have arisen from the interesting experiments of Professor J. Henry already alluded to: it consisted essentially of an electro-magnet—a keeper of soft iron carrying a pencil or pen, and a band of paper slowly passing over a roller, so placed that when the electro-magnet attracted its keeper, the pen or pencil would be pressed down on to the paper, and thus make a mark or signal. The general form of this arrangement is shown in fig. 5. *A* is a powerful electro-magnet, capable of being converted into a pretty strong magnet, when an electric current is transmitted through the wires *B C* from the distant station. The keeper is attached to a small lever and kept in its position by a spring *F*. *D* is the pencil and *E* the moving roller, on the surface of which is the paper intended to receive the telegraphic marks. When an electric current is transmitted, the keeper being attracted by the magnet causes the pencil to make a dot or mark on the paper; by sending, two, three, four, or more rapidly succeeding currents, the same number of marks are indicated on the paper; and thus it is easy to obtain any required number of signals. It is stated that this telegraph has been greatly improved within the last few years, and is now spreading rapidly over all parts of the United States. The above sketch can only be regarded as an outline of the general principle, because it is evident that other arrangements must be employed for any distance, as the power would hardly be sufficient in the method just described. The signals transmitted by this kind of telegraph occupy some time in sending, but they possess the advantage of self registration, and are consequently to a great extent independent of the attention of the observer.

FIG. 5.



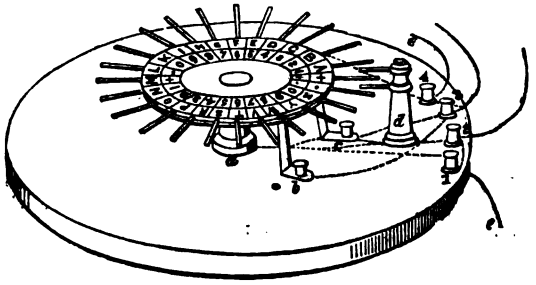
The success which attended the first telegraph of Messrs. Wheatstone and Cooke, led the former gentleman to make a careful and extended series of experiments on the laws which regulate the transmission of electric currents, and the relation which exists between the intensity and quantity of the current, the resistance offered to its passage, and the magnetic effects which it can produce. These investigations, at the same time that they throw much light on the laws of dynamical electricity, led Mr. Wheatstone to devise a new and very valuable form of electro-magnetic telegraph; and accordingly, in January, 1840, Messrs. Wheatstone and Cooke took out a second patent. The principle employed in this new instrument is well exhibited in fig. 6 (Daniell's *Elements*). It consists essentially of an electro-magnet, surrounded with a long and fine wire, *A*., and a

Fig. 6.



keeper of soft iron, *B.*, prevented from coming in complete contact with the poles of the magnet, but so near as to be within reach of the attractive power of the magnet, when the latter is under the influence of the current. The motion of the keeper was made use of in various ways to communicate signals; in fig. 6 it is represented as acting by a species of clock escapement, on a small ratchet wheel, and thus causing the rotation of a light disk of paper or mica, *E.*, on the circumference of which the letters of the alphabet, or other signals, are marked. In the diagram, part of this disk is represented as cut away in order to show the position of the ratchet wheel behind. Every time that an electric current is transmitted from a distance by the wires *C. D.*, and they may be made to succeed each other with great rapidity, the disk is advanced one tooth of the wheel, and consequently another letter; and when the electric current is interrupted, the keeper being no longer attracted, is drawn up again to its original position by a spring, and the disk advanced another letter. The whole instrument is inclosed in a case, having an aperture in front, which only permits one letter at a time to be seen. In using this telegraph the instrument is always placed, at the commencement with the sign of a cross only visible, which is before the letter *A.* on the round disk; if then we wish to indicate the letter *H.*, it is necessary to transmit four separate electric currents, in order to attract the keeper four times, and so cause the disk to move round eight divisions, the letter *H.* will then be exhibited. The transmission of the currents is managed by a little instrument, represented in fig. 7. It consists of a horizontal brass wheel, divided and marked on its upper surface like the disk of the telegraph, with which it perfectly corresponds. The circumference of this wheel is cut away in twelve places, and filled up with small pieces of ivory.

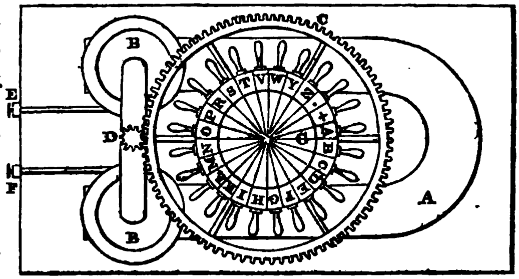
Fig. 7.



A metallic spring, *b*, pressing against the circumference of the wheel, is, of course, alternately in contact with the metal of the brass wheel and the ivory pieces, when the wheel is turned round. When the instrument is not in use, the cross at the commencement of the alphabet is always placed opposite to the stop *d*, as in this position alone the metallic spring *c*, by pressing on a small piece of metal connected with the stand *a*, cuts off the connection with the battery, and therefore leaves the telegraph in a fit state to receive signals from the distant station. As soon as the wheel is moved from this position the battery is brought into connection, and as it is gradually turned round, the required number of interrupted currents is transmitted to the magnet. In the circumference of the brass wheel a number of iron pins are inserted, one corresponding to each letter, and therefore, by taking hold of the pin corresponding to the letter we wish to indicate at the distant station, and rapidly turning the wheel till stopped by the cross piece at *d*, we cause the latter disk of the telegraph to revolve the required amount.

The preceding is one of the simplest forms of this telegraph, but the power is applied in many ways; thus, in place of moving the latter disk, it may remain stationary, whilst a light hand or index only, is caused to revolve, or in place of an electro-magnet being used, the mere deflection of a vertical galvanometer, may be employed for the same purpose. As it was found that a telegraph of this kind, though excellent for short distances, was not so suitable for long ones, a modification was adopted, in which the power required was greatly diminished, and the delicacy of the telegraph much increased. In this form, a powerful clock movement, acted on by a strong spring, was employed to rotate the disk or index, the attraction of the keeper being only used to regulate the escapement, every current releasing a single tooth, and so allowing the clock movement to advance the disk one letter. A great improvement was also made in doing away at the same time with the use of the battery, and of the current "communicator" just described (fig. 7). This was effected by employing a magneto-electric machine instead of the ordinary battery. Fig. 8 shows a vertical representation of one of the machines used for this purpose, consisting of a permanent magnet *A*, an armature or keeper of soft iron *B B*, surrounded with coils of copper wire, and connected with the binding screws *E F*. The armature can be made to revolve by the action of the larger wheel *C*, on the pinion *D*, which is thus caused to revolve just so many times by one revolution of the wheel *C*, as will give rise to the number of currents, requisite to turn the telegraph disk once round. The whole of this instrument is inclosed in

FIG. 8.



a box, and the axis of *C.*, which rises through the top of the box, carries a solid brass wheel, *C.*, having handles corresponding to the letters of the alphabet, and the signals of the telegraph disk.

In conclusion, Mr. Solly briefly described some of the many minor kinds of telegraphic signals which can be conveniently transmitted by electricity. Such as, for example, the electric clock, and for the regulation of temperature. A current of thermo-electricity generated by a single angle of copper and iron wire exposed to the heat of a flue or chimney, gave distinct and accurate evidence of the heat of the fire at some hundred feet distance.

FIG. 9.

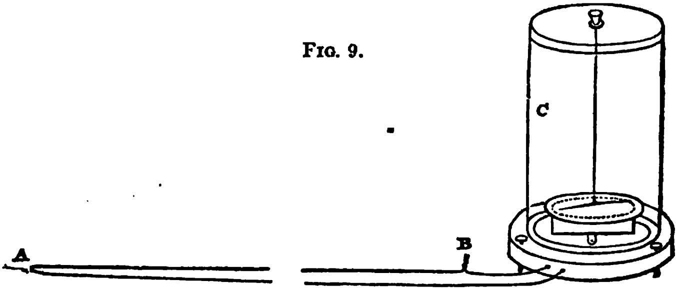


Fig. 9, explains the whole apparatus requisite for this purpose. *C*, a delicate galvanometer, a piece of iron wire and a similar piece of copper wire of sufficient length to reach to the source of heat, the one junction being at *A*, and the other imbedded in the brickwork of the flue, or otherwise placed near the furnace, whilst the other junction *B*, is near the galvanometer. Such an arrangement gives a simple and very convenient thermometer for ascertaining the fluctuations in heat of a distant furnace or stove.

PHARMACEUTICAL MEETING,

WEDNESDAY, FEBRUARY 10th, 1847.

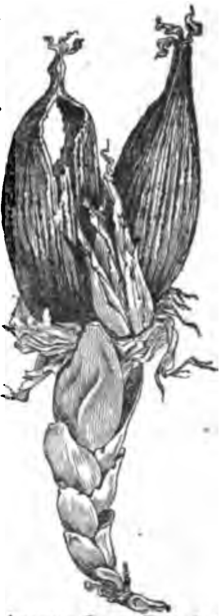
MR. MORSON, VICE-PRESIDENT, IN THE CHAIR.

ON THE FRUIT OF AMOMUM MELEGUETA—(ROSCOE.)

BY JONATHAN PEREIRA, M.D., F.R.S.

IN a paper on *Grains of Paradise,* read at a meeting of the PHARMACEUTICAL SOCIETY on December 14th, 1842, and published in the second volume of the PHARMACEUTICAL JOURNAL, I have shown that the term *Grains of Paradise* has been applied to the produce of no less than six scitamineous plants. At the present time, and in this country, the term is exclusively applied to the hot acrid seeds imported into England from the coast of Guinea, and frequently called *Guinea Grains.*

Fig. 1.



Amomum Grana Paradisi (Smith). Natural size.

The late Sir James Edward Smith received from Dr. Adam Afzelius specimens of the grain of Paradise plant in fruit; and in Rees's *Cyclopædia* (Art. *Mellegetta ;* and Supplement, Art. *Amomum*) he has very minutely described it under the name of *Amomum Grana Paradisi.*

The following is his description of the fruit and bracts:—

> "*Capsule* an inch and a half long, half an inch in diameter, oblong, bluntly triangular, scarcely ovate, beaked. of a dark reddish-brown, ribbed, coriaceous, rough, with minute, deciduous, bristly hairs. When broken it is very powerfully aromatic, even after being kept twenty years, with a peculiar pepper-like flavour, rather too strong to be agreeable. *Seeds* numerous, enveloped in membranes formed of the dried pulp, roundish or somewhat angular, of a shining golden brown, minutely rough or granulated, extremely aromatic, hot, and acrid." *Bracts* numerous, closely imbricated, ovate, rather shorter than the fruit, with a short, thick, dorsal spine, lower ones crowded.

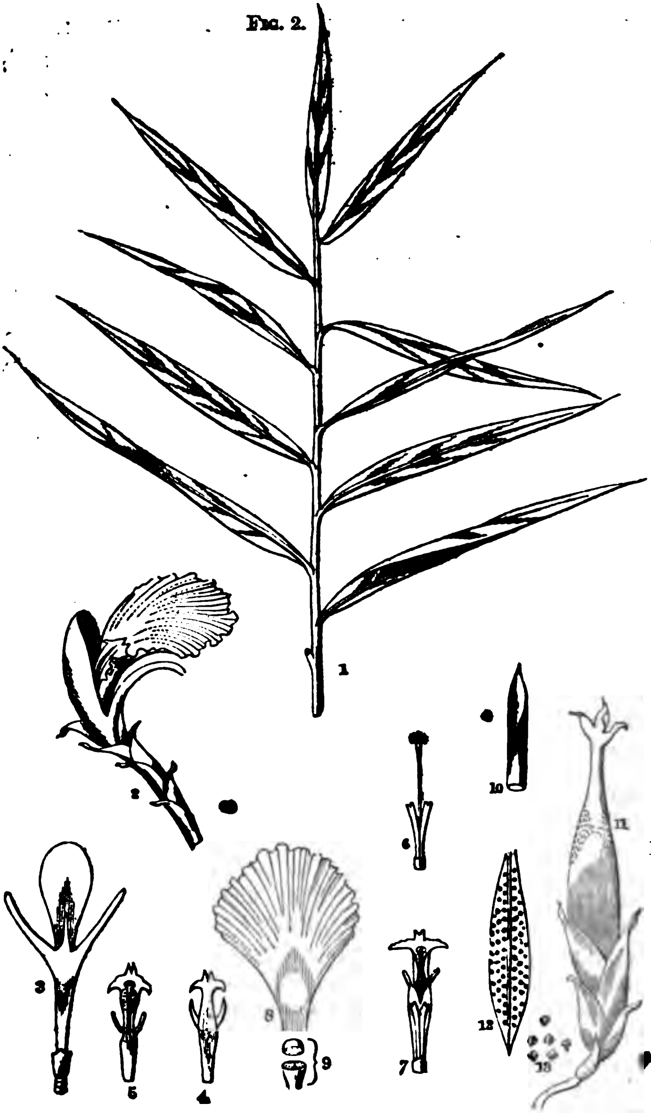
Subjoined (fig. 1) is a drawing of the fruit-stalk of this plant, clothed with its bracts and bearing several capsules.

The figure, which is represented of its natural size, is taken from the plant in Sir J. E. Smith's herbarium, now in the possession of the Linnean Society. The seeds, though now about fifty years old (the plant having been brought from Africa in 1798), still possess the hot and acrid flavour which characterizes them as grains of paradise. Their size is perhaps somewhat smaller than that of the average commercial grains; but in other respects I can discover no difference between them and the ordinary grains of paradise of the shops. The spines of the bracts appear to have been broken off; at least, "the short, thick, dorsal spine," is not very obvious now.

In 1828, Roscoe published in his *Monandrian Plants of the order Scitamineæ,* a drawing and description of a plant which flowered in the Botanical Garden at Liverpool, and whose seeds he declared to be identical with the *Melegueta Pepper,* or *Grains of Paradise* of the shops. This plant he named *Amomum Melegueta.* His description of it is as follows:—

> "AMOMUM MELEGUETA. SP. CHAR.—*Leaves* narrow-lanceolate, subsessile, alternate, strongly nerved ; *lip* large, ovate, crenate, white, terminating with crimson, pale-yellow at the base ; *germinal processes* near an inch long ; *capsule* six inches long, coriaceous, yellow.

FIG. 2.



Amomum Melegueta (Roscoe). Reduced size.

1. Stem and leaves.
2. Entire flower and floral bracts.
3. Exterior limb of corolla.
4. Filament, anther, style and stigma.
5. Filament seen at the back.
6 } Same parts as figs 4 and 5, showing
7 } also the germinal processes.
8. Interior limb of corolla or lip.
9. Germen.
10. Calyx.
11. Capsule and permanent bracts.
12. Interior seed-vessel.
13. Seeds.

> "*Stem* erect, six feet in height; *leaves* bifarious, subsessile, narrow-lanceolate; *scape* radical, covered at the base with about seven imbricated, ovate, concave, pointed, and somewhat cuspidate *bracts*; *calyx* cylindrical, of one leaf, green, spotted with red; *flowers* cylindrical, expanding in a double border; outer border in three sections, the middle section largest, ovate, the two others linear and opposite; inner lip very large, broad-ovate crenate, pale yellow at the base, and crimson at the margin; filament strong, erect, clavate, terminating in three lobes, middle lobe erect and bifid, the other two pointed and recurved; a pair of hornlets on the filament, near the base of the lip; anther in two lobes, seated in front of the filament, a little below the apex, bright yellow; style erect, tubular, expanding into a ciliated stigma or cup, supported at the base by two linear processes, about an inch in length, one-eighth of an inch in breadth, by much the largest specimen of this part observable in any scitamineous plant; *fruit* a cylindrical, coriaceous, capsule, six inches in length, yellow spotted with orange, supported at the base by the large ovate concave cuspidate bracts; and containing a columella or receptacle, about four inches long, covered with seeds beautifully arranged, arilled, and imbedded in a tomentose substance; *seeds* angular, light brown, with a highly aromatic and grateful flavour."

Roscoe states that the specimens from which his drawing was taken were raised in the Botanical Gardens of Liverpool, from seeds " sent by Mr. C. S. Parker from Demerara, where it [the plant] is extensively cultivated, and where the seeds are much used by the inhabitants as a valuable ingredient in their diet."

Thus then two plants, viz. *Amomum Grana Paradisi* of Smith, and *Amomum Melegueta*, Roscoe, are each stated to be the source of the grains of paradise of the shops; and it is interesting to determine whether these are identical or distinct species.

Roscoe states that, after diligently comparing his plant—

> "With the African ones, discovered by Afzelius, and particularly with the full and excellent description of the various species by Sir J. E. Smith, in Rees's *Cyclopædia*, the most complete that has hitherto appeared, we are strongly of opinion that the present plant differs from all that have hitherto been described, and from the great size and beauty of its flowers, the conformation of its fruit, and above all, the extraordinary magnitude of its germinal processes, unparalleled, as far as we have observed, in any other scitamineous plant, it is to be considered as a distinct species."

Some months since, when he was in London, Mr. J. S. Stutchbury, of Demerara, a Member of the Pharmaceutical Society, and one of the Corresponding Members of the Scientific Committee of the Society, presented to the Society several specimens of the fruit of the Amomum Melegueta, and also a wet preparation of the flowering plant. More recently he has transmitted from Demerara to the Society an extensive and interesting collection of the fruits of this plant preserved wet.

In a communication made to the Scientific Committee by Mr. Stutchbury, it is stated that—

> "The plant, from which the accompanying fruit is obtained, is cultivated in Demerara by many of the old African negroes, and the dried

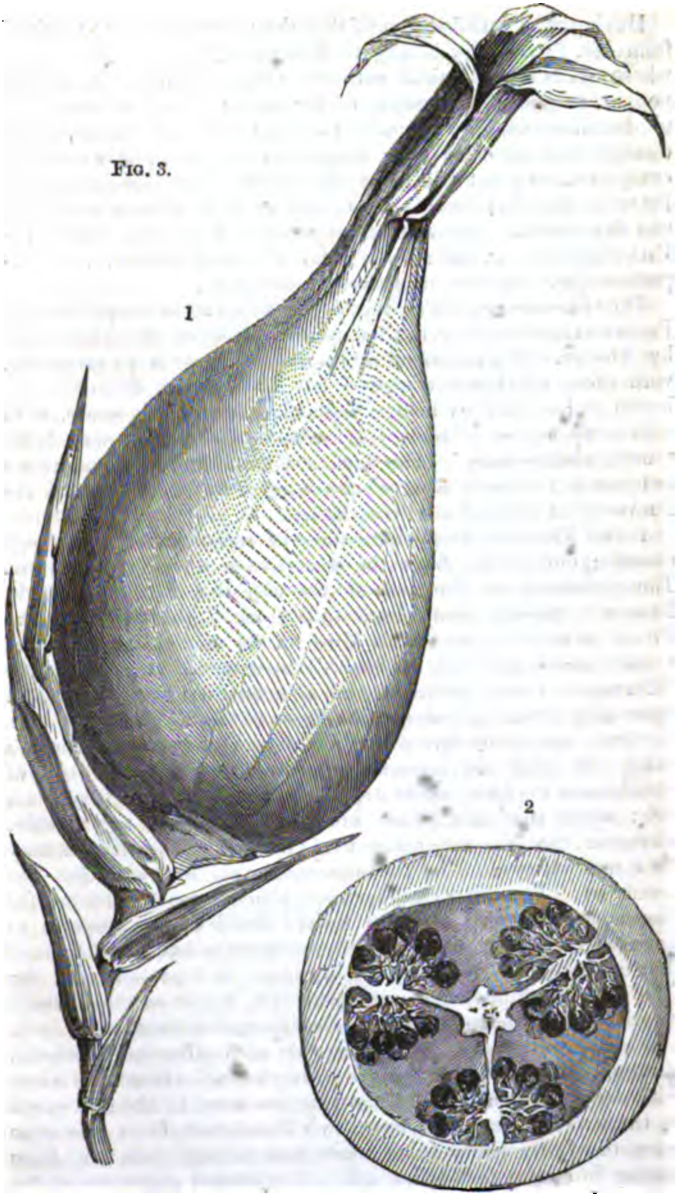
seeds sold to the Druggists in Georgetown, as grains of paradise, with which they appear to be identical. The seeds were probably carried there originally by the Africans, among whom they are known under the name of Guinea Pepper. They are, when fresh, more aromatic than the grains of paradise, as they reach us from Africa, but are equally pungent."

In conversation with Mr. Redwood, Mr. Stutchbury further stated, that the plant had not been found growing wild in Demerara excepting in localities where negroes' huts had existed, and that it was cultivated only to a very limited extent; a negro having, perhaps, a dozen plants or so in the garden attached to his hut. He added that the plants formed very pretty garden flowers, and that the seeds were saved and sold to the Druggists in Georgetown as guinea pepper, or grains of paradise, but were never exported, the supply not being equal to the consumption of the place; and, therefore, African grains of paradise were imported from London.

The plant and fruit presented to the PHARMACEUTICAL SOCIETY by Mr. Stutchbury, and which are now in the Society's Museum, undoubtedly belong to the *Amomum Melegueta* of Roscoe. Of this I have assured myself by carefully comparing the several parts of the flower with the description and drawing published by Mr. Roscoe. The flower being preserved wet admits of complete examination; but it requires to be cautiously and carefully done under water. I carried the preparation to the house of the Linnean Society, and examined it there, in order that I might have Roscoe's work by my side during the investigation. In this examination I was kindly assisted by Mr. Kippist, the Librarian. All the parts of the flower were found to agree precisely with Roscoe's description and figures.

The fruits of the two plants differ somewhat in size and shape; that of Roscoe being longer, narrower, and more cylindrical, while those sent over by Mr. Stutchbury, was somewhat shorter, considerably broader, and ovate. Thus Roscoe's capsule was six inches long, and, at its broadest part, about an inch in diameter; whereas the fruits sent by Mr. Stutchbury, are about five inches long, and an inch and three-quarters in diameter, at their broadest part. Roscoe describes the bracts on his plant as being about seven in number, but those on the most perfect fruit, sent by Mr. Stutchbury, are twelve in number, viz., seven larger ones, and five small ones. In all other respects, I can discover no essential difference between the two fruits: in coriaceous texture, in colour, in the spottings, in the columella, in the arilled, angular, brown, and aromatic seeds, they appear to be identical. The seeds sent by Mr. Stutchbury, however, in addition to their aroma, possess that fiery taste and acridity which every one well knows to belong to grains of paradise, but which is not alluded to by Roscoe.

Fig. 3.



Fruit of *Amomum Melegueta* (Roscoe) received from Mr. Stutchbury.
Natural size.
1. Entire fruit, preserved wet. 2. Transverse section of fruit.

Having thus satisfied myself that the plant and fruits received from Mr. Stutchbury belong to Roscoe's *Amomum Melegueta*, whose seeds are identical with the Guinea grains, Melegueta pepper, or grains of paradise of the shops, I next endeavoured to determine whether Smith's *Amomum Grana Paradisi*, was a distinct, or the same species; and for that purpose, I have carefully compared his plant and fruits, with those in the museum of the Pharmaceutical Society, as well as with Roscoe's drawing and description. Smith's plant is without flowers, whilst the Pharmaceutical Society's plant is without leaves: the comparison was, therefore, necessarily incomplete.

The *rhizome* of Smith's plant, agrees with that of the plant in the Pharmaceutical Society's museum. This part is not described by Roscoe. The *leaves* of Smith's plant agree in all essentials, with those of Roscoe's plant. Sir J. E. Smith describes the leaves of his plant as being "lanceolate, or slightly ovate, with a long taper point;" while Roscoe states those of his plant to be "narrow lanceolate." The *flowers* of Sir J. E. Smith's plant are not present; those of Roscoe's plant agree with the flowers of the Pharmaceutical Society's plant.

In all the preceding characters the three plants agree very closely; but in the *fruit* the accordance is not so manifest. The difference in the size of the capsules is very marked: Roscoe's capsule being four times, while the fruits in the Pharmaceutical Society's Museum are more than three and a half times as long as Smith's specimen. A considerable difference is also perceived in the breadth of the fruits: Roscoe's fruit being twice, while those of the Pharmaceutical Society are about thrice and a half the diameter of Smith's plant. It must be remembered, however, that the fruit of Smith's plant is hard, quite dry, shrivelled, and about fifty years old; while the other fruits are quite fresh. It is probable, moreover, that the Pharmaceutical Society's specimens may be somewhat swollen by the aqueous liquor in which they are preserved. Two other circumstances also may partly account for the disparity in size of these fruits: Smith's plant appears to have been a small one, the stem being only half the height of that described by Roscoe; and, secondly, it is possible that the fruit was not quite ripe when gathered, a circumstance which might account for the shrivelled condition of the seeds.

Sir J. Smith states, that the capsule of *A. Grana Paradisi* is "rough, with minute deciduous bristly hairs." Roscoe is silent with regard to hairs; and I can perceive none in the specimens in the Pharmaceutical Society's Museum. Does this arise from the latter fruits being more mature and from the hairs having in conveyance fallen off? The ribbed character of the fruit in Sir J. Smith's specimen was probably obtained by drying; at any rate it is not represented by Roscoe, nor does it exist in the plump specimens belonging to the PHARMACEUTICAL SOCIETY. The *bracts* are said by Sir J. E. Smith, to be numerous, by Roscoe, to be about seven. In the PHARMACEUTICAL SOCIETY's plant, they are about twelve in number. In the latter plant as well as in Roscoe's drawing, the cuspidate character of the bract is very marked. In Smith's plant, this is not obvious, but the points have been probably broken off, as Sir J. E. Smith states that the bracts "have a short, thick, dorsal spine." The permanent bracts on the fruit-stalks of the fruit sent from Demerara by Mr. Stutchbury are somewhat more acute than those on Sir J. E. Smith's plant. As represented in fig. 3, these bracts appear much more acute than they really are, in consequence of being curled inwards at the edges, probably by the action of the liquid in which they are preserved. On spreading them open and placing them by the side of Sir J. E. Smith's plant, the real difference in shape is not very great.

The *seeds* of the fruits in the Society's collection are somewhat plumper and of a darker brown than those in Smith's plant, or than the grains of paradise of commerce; but I ascribe these peculiarities to the seeds not having been dried. In their hot and fiery, though aromatic flavour, all the seeds agree; perhaps those received from Mr. Stutchbury have more aroma than the commercial seeds.

On the whole I am inclined to believe that Smith's *Amomum Grana Paradisi* and Roscoe's *Amomum Melegueta* are identical species. Certainly, after a careful comparison of the plants, side by side, I can discover no sufficient differences between them to warrant the statement that they are essentially or specifically distinct. But in the absence of flowers in the plant described by Smith, I cannot venture to affirm the identity of the plants.

Finsbury Square.

ON MARKING INK,

For Marking Linen, &c. without the use of a Mordant,

BY MR. REDWOOD.

THE practice of marking linen and other similar fabrics employed as wearing apparel, or for domestic use, with a preparation of silver, commonly called *Marking Ink*, has prevailed for many years, and has now become almost universal. The preparation first introduced for this purpose consisted of a solution of nitrate of silver, thickened with gum arabic and coloured with sap green; but in using this solution it is necessary previously to apply to the article to be marked, a ***preparation*** or ***mordant***, consisting of a solution of carbonate of soda.

The following formula has been very generally adopted in the preparation of this kind of marking ink:—

℞. Carbonate of Soda ℥ss.
Distilled Water ℥iv.
Mix, and sign "*The preparation or Mordant.*"

℞. Nitrate of Silver ʒj. ℈ij.
Gum Arabic ʒij.
Sap green ℈j.
Distilled Water f℥j.
Mix, and sign "*The Ink.*"

The ink made from the above, or a similar formula, which, I believe, almost every Druggist through the country has been in the habit of preparing and selling, when used according to the usual instructions, produces a result which is subject to no objection that does not equally apply to any other marking ink having silver as its basis.

Within the last few years, however, the marking ink made as above, has been to a great extent superseded by the introduction of a new kind of ink, which does not require the use of a ***mordant*** or ***preparation***. This ink appears to be generally preferred to the other;—it is in one bottle, which occupies but little space, and its use is considered to be attended with less trouble and inconvenience than that of the other.

My attention has recently been directed to this subject, as I was desirous of introducing a good formula for ***marking ink to be used without a mordant*** into the new edition, now publishing, of Gray's ***Supplement to the Pharmacopœia***. Several formulæ have been published in the Journals, for the preparation of this ink, but none of these have given complete satisfaction.

The following appear to be the principal requisites in this kind of ink:—

1st. That it shall flow freely from the pen, and form a well defined mark without running or blotting.

2nd. That it shall not require a very strong or long continued heat to be applied, by holding the article that has been written on to the fire, or passing a hot iron over it, in order to develope the black mark required.

3rd. That the marks produced by it, when developed by the application of heat, or by exposure to light, shall be perfectly black.

4th. That it shall not destroy the texture of even the finest cambric.

After several experiments, I have succeeded in making a marking ink, which I think will be found to realize all the above conditions;—it is thus prepared:—

℞. Nitrate of Silver ℥j.
Carbonate of Soda, crystallized, ℥iss.
Tartaric Acid ʒij. ℈ij.
Strong Liquor Ammoniæ f℥ij. or *q. s.*
Archil f℥ss.
White Sugar ʒiv.
Powdered Gum Arabic ʒxij.
Distilled Water *q. s.*

Dissolve the nitrate of silver and carbonate of soda separately in distilled water; mix the solutions; collect and wash the precipitate on a filter; introduce the washed precipitate, still moist, into a Wedgewood's-ware mortar, and add to it the tartaric acid, rubbing them together until effervescence has ceased; add *liquor ammoniæ* in sufficient quantity to dissolve the tartrate of silver; then mix in the archil, white sugar, and powdered gum arabic, and add as much distilled water, if required, as will make f℥vj. of the mixture.

It will be observed that the essential difference between this formula and those which have been already published, consists in the use of tartrate of silver, instead of nitrate of silver.

APPARATUS FOR ADMINISTERING THE VAPOUR OF ETHER.

BY MR. OWEN, OF EXETER.

THE multiplicity of the contrivances that have been submitted to the Society, and noticed in its Journal, would have deterred me from offering another to its attention, if it were not for the circumstance that of the *four* essential and desirable qualities, *efficiency*, *simplicity*, *cheapness*, and *portability*, the first only has been fully attained in those hitherto described.

The instrument I have invented, obviously excels in the three last mentioned particulars, while in testimony to its efficiency, it may perhaps be enough to state, that it produces the desired effect in as short a time as any I have read of. The time varies from three-quarters of a minute to fifteen minutes.

Fig 1

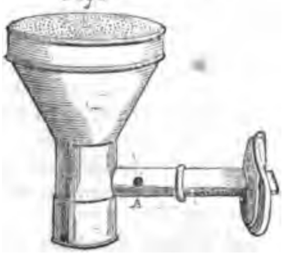
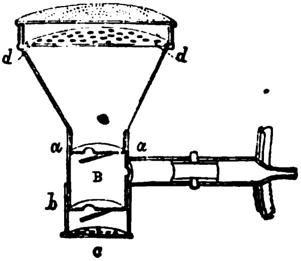


Fig 2



It is made of *tin*, in the form of a funnel, about four inches in diameter, having a very finely perforated moveable cover, and furnished with a short open fixed tube and mouth-piece, as seen in fig. 1.

In fig. 2, it is represented in its detached parts, and in section, for the purpose of exhibiting the internal construction. The short stem of the funnel *a a*, which is about an inch and a half in diameter, fits tightly into the cylinder *B*, and is closed at the bottom by a disk of tin soldered into it, but having a hole through it, about three-eighths of an inch in diameter, covered with a flap of *vulcanised Indian-rubber;* this allows the vapour to pass downwards, but not to return. The lower extremity of the cylinder *B*, is in like manner furnished with a valve, opening in the same direction. When the parts are put together, and a person inhales from the mouth-piece, the lungs are supplied through the body of the instrument, the lower valve *b b* closing, and the upper one, *a a*, opening at each inspiration. The act of exhalation, on the other hand, closes the valve *a a*, while the vitiated air from the lungs escapes by that at *b b*, instead of passing again into the funnel.

C is a perforated cap to protect the lower valve. The mouth-piece is of tin, lined with a piece of patent leather about one-eighth of an inch in thickness, and it may be curved, to suit the external form of the mouth.

I would remark, that at first I was not careful to have the valves and tube *wide enough*, and I used leather flaps. Since I have enlarged the passages, employed the *vulcanised Indian-rubber*, and abandoned the flexible tube, I have had no disappointment.

The instrument is charged by saturating with washed ether, a round cake of sponge, made to lie upon an openly perforated diaphragm *d d*, and large enough to fill entirely the space between it and the cover. A due supply of atmospheric air is admitted through the cover, and thoroughly impregnated with the vapour of ether, in its passage through the saturated sponge. When the inhaler is done with, the sponge should be put into a four-ounce wide-mouthed stoppered bottle, that the remaining ether may be preserved. A little more should be added, when it is next required for use.

In using this instrument, one hand only is required to hold it to the mouth, and at the commencement of the inhalation, air may be admitted by the opening in the tube (*A*, fig. 1) until the patient can bear the full power of the vapour, when the middle finger should stop the orifice.

I have found the same end answered without this aperture, by leaving the nostrils open for a little time at first, but in some cases, the aperture may be found preferable.

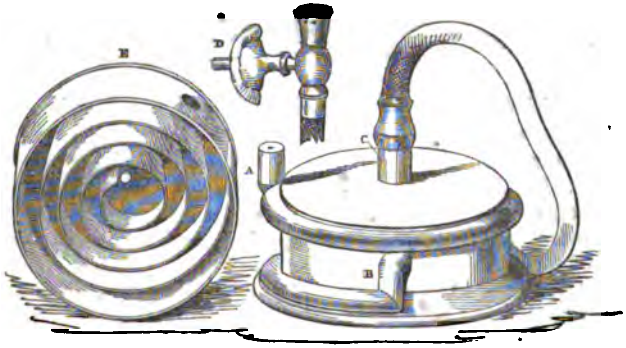
The Chairman having left the chair, Mr. Bell, before the meeting dispersed, took the opportunity of adverting to the verdict recently given against Mr. Hooper (p. 436). The circumstances of the case having been stated, all present appeared unanimous in the opinion that the verdict was a very severe one.

ORIGINAL AND EXTRACTED ARTICLES.

APPARATUS FOR INHALING ETHER.

DURING the past month several forms of apparatus for this purpose have been introduced. We subjoin the following illustrations, in order to make our series complete.

DR. SNOW'S APPARATUS.



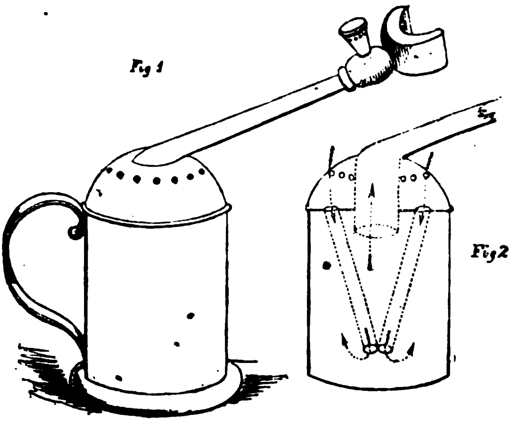
A. Opening of pipe at which the air enters.
B. Termination of pipe in the tin box.
C. Point at which the flexible tube is removable by unscrewing.
D. Mouth-piece.
E. Tin vessel, with bottom removed, to show its interior.

IT consists of a round tin box, two inches deep, and four or five inches in diameter, with a tube of flexible white metal, half an inch in diameter, and about a foot and a half long, coiled round and soldered to it. There is an opening in the top of the vessel, at its centre, for putting in the ether, and afterwards attaching the flexible tube belonging to the mouth-piece. In the interior is a spiral plate of tin, soldered to the top, and reaching almost to touch the bottom. When used, the inhaler is to be put in a hand-basin of water, mixed to a particular temperature, corresponding to the proportion of vapour that the operator may desire to give; and the caps being removed, and the mouth-piece attached, when the patient begins to inhale, the air gains the desired temperature in passing through the metal pipe; it then comes upon the surface of the ether, where it winds round three or four times before entering the tube going to the mouth-piece, thus ensuring its full saturation, and preserving it at the desired temperature. There is no valve, or any other obstruction to the air, till it reaches the mouth-piece, which is of the kind used in other inhalers, and contains the valves necessary to prevent the return of the expired air into the apparatus.

By a remarkable coincidence we find that an instrument identical in principle with that invented by Dr. Snow, was invented some years ago by Mr. Jeffery as an inhaler. The circumstance reminds us of the case of the new planet, in which two rival discoverers are in the field.

Mr. JEFFERY'S APPARATUS.

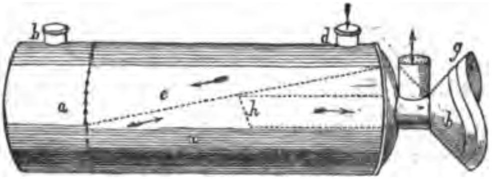
INHALER USED AT THE LONDON HOSPITAL.



This resembles a common tin pot. Fig. 1. represents the apparatus arranged for use. Fig. 2. is an inner vessel represented in section. The sponge wetted with ether is placed on a diaphragm near the top through which two tubes descend, conveying the ether vapour with air to the lower part of the vessel. It then ascends through the centre tube to the mouth-piece. The arrows denote the direction of the current. Air is admitted through the holes in the top.

We have received a very simple form of apparatus from Mr. Smee, and regret that it arrived too late for a cut to be completed in time for this number. It consists of a metal mouthpiece, to which is attached a receptacle, resembling a small pouch, of the same material into which the sponge containing ether is placed. The whole instrument, at first sight, might be supposed to be a very thick mouth-piece. It requires one improvement; namely—a division, so placed, as to prevent the possibility of the liquid ether running into the mouth.

MR. ALFRED SMEE'S INHALER.



a. Hot water chamber.
b. Aperture with screw.
d. Aperture to admit air and ether, with a screw to be employed when the inhaler is not in use.
c. Ether chamber.
e. Diaphragm.
f. Mouthpiece.
g. Expiratory valve.
h. Inspiratory valve.

The arrows show the current of air when the instrument is in use. The instrument is made of tin or any other suitable metal.

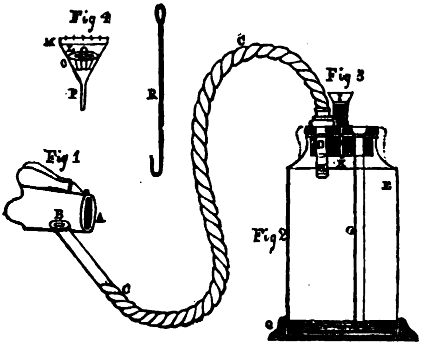
MR. STARTIN'S PNEUMATIC INHALER.

FIG. 1, INSPIRATOR, or mouth-piece, with brass spring for compressing the nostrils.—— *A*, Expiratory valve.—*B*, Inspiratory valve *C*, *C*, Flexible tube.

FIG. 2. THE RECEIVER.—A glass vessel, *E*, *E*.—*F*, Hot or cold water.—*G*. A glass or metallic tube dipping into the water.—*H*, Extremity of the flexible tube. *Q*, Hollow stand containing hot water.

FIG. 3. THE INJECTOR.—*I*, Reservoir containing ether, with a thin flexible metallic cover, and a tube, *K*, descending into the receiver.

FIG. 4. THE FUMIGATOR.—To be substituted for the Injector in certain cases when other substances are used instead of ether.



ON SYRUP OF IODIDE OF IRON.

SIR,—The appearance in the last number of the *Pharmaceutical Journal* of a communication from Messrs. Smith, of Edinburgh, on Syrup of Iodide of Iron, affords me an opportunity of making amends to them for the very slight allusion to their process which occurs in my paper on the subject read before the Pharmaceutical Society.

I entirely agree with the opinion expressed in the opening sentences of their letter, namely, that most of the processes for making this syrup appear unnecessarily complicated, a fault which it is desirable to remedy, because, for obvious reasons, quick manipulation should be resorted to, and dilatoriness and prolixity carefully excluded, and in proportion as I felt that the evil existed, did I see occasion to suggest a change. The formula of the Edinburgh College (the best that I was acquainted with) seemed to me capable of improvement, and I mistake if even the amended one of Messrs. Smith cannot be advantageously modified: for example:—

Take of Solution of iodide of iron *
(30 grains in a fluid drachm) ℥ii.
Sugar coarsely powdered ℥xij.
Distilled water, *q. s.*

Add the solution to the sugar in a graduated bottle, make up with water to fifteen ounces, and dissolve with a gentle heat; this would supersede the necessity of washing a filter, which *must* contain decomposed iodide; little, if the operator has been quick, more, if he has been slow, and sufficient in the latter case to colour and deteriorate the product. It would also remove an adventitious source of mischief depending on the use of rusty filings, the oxide retarding filtration by stopping the pores of the filter.

But the difference, and the only difference worth insisting on between my plan and that followed by others, is, that I use a *cold* solution, which decomposes slowly, and *do not* apply heat after mixture with the sugar, and they employ a *hot* solution, which agreeably to the testimony of Messrs. Smith decomposes with amazing rapidity, and *do* apply heat after mixture with the sugar; the minor details are of trifling importance—perhaps from habit I prefer them as I have recommended, and yet I think there is an argument in their favour to be drawn from the fact, that sugar changes its properties by prolonged exposure to iodide of iron at elevated temperatures; by this substitution of cold for hot liquor, it appears to me, that labour and the chances of failure are diminished, and as the name of Smith stands associated with several useful contributions to practical pharmacy it will be acceptable to have their opinion on the subject, and to learn from them whether, in their estimation, the alteration I have suggested would not be attended with advantage.

It has been observed, that very good syrup can be made according to old methods—this I conceded in the first paragraph of my paper before alluded to, and if every one were expert at his calling, observation would be superfluous; unfortunately, however, this is not the case, and it is scarcely possible to tax simplicity to too great an extent.

Neutral solution of Iodide of Iron is *blue*-green. This is the colour of a syrup made after my process; yellowish-green, yellow, and brown appearances indicate degrees of decomposition, and corresponding imperfection in formulæ which are attended with their production.

I remain, Sir,

Very respectfully yours,

WALTER HEMINGWAY.

Portman Street, Portman Square.

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* Here it is to be noted that I do not impose on the operator the extra trouble of making a solution; to meet the exigencies of a dispensary such a preparation is already required, and the proportion of one part in two is well adapted for practical purposes.

NOTE FROM MESSRS. SMITH.

(Having been kindly favoured by the Editor of the *Pharmaceutical Journal* with a proof of Mr. Hemingway's paper, having reference to our process for preparing Syrup of Iodide of Iron, we beg briefly to explain our reasons for still holding our own views on the subject. The main objection to these is, that by heat the sugar is decomposed. In fact, we believe such a change as little liable to take place in the case of the process suggested by us, as in the other proposed to be substituted. The chief basis of this belief lies in absolute and practical experience; but we shall also observe, that good reasons may be assigned in support of our plan.

We have always thought it almost wholly unnecessary to find whether any change is produced upon the sugar in the syrup when made by our process. However interesting this question may be in a chemical view, to the Pharmaceutist it is altogether unimportant practically. The only point for consideration of any real moment is—Does the process fulfil the end for which it was introduced? That our formula does so, perhaps even better than was at first anticipated, we repeat that we can, from long trials, fully affirm.

The proportions of about four parts of *cold water* to one of iodine has been purposely fixed, so as to produce a degree of heat not much short of ebullition: thus saving time, and rendering a much shorter application of heat necessary. But it must be recollected that decomposition does not take place at this stage of the process. This is prevented by the excess of iron. At the very period of the process when this can occur, it is prevented by the preservative saccharine mass into which the solution is directly filtered.)

T. AND H. SMITH.

SYRUP OF POPPIES.

BRIGHTON, FEB. 9, 1847, 49, *Grand Parade.*

DEAR SIR,—I believe it is the prevailing opinion that the compilers of the last Pharmacopœia, in directing a certain weight of the capsules to be used, in the formula for syrupus papaveris, have made an unintentional omission, as all preceding editions have ordered the capsules to be weighed without the seeds, and I cannot suppose the College would sanction the reduction in the strength of the syrup to nearly one half without assigning some reason for so doing. I find the majority of our brethren adopt the formula of 1824:—

℞ Papaveris capsularum exsiccatarum et contusarum, *demptis seminibus*, uncias quatuor decim; sacchari purificati libras duas, aquæ ferventis, congios duos cum semisse.

And if your correspondent, signed B. M. P. S., will try the admirable method of making the syrup recommended by Mr. Southall, and to which your correspondent refers, I have no doubt he will fulfil the intention of the College, and be well pleased with the result.

It is much to be regretted that oxymel scillæ differs so much in appearance, frequently causing alarm in the minds of patients. I think this owing in a great measure to the use of bad or unclarified honey, for by employing good honey well clarified, and preparing the oxymel in a water-bath, an article is obtained much finer in flavour, and more uniform in colour. I have seen a specimen of oxymel scillæ from a highly respectable retail house, which deposited one-eighth of impurities on being allowed to stand a week; which shows that it is a false economy to use bad honey.

I am, dear Sir, yours truly,
JAMES THOMAS GWATKIN.

TINCTURE OF HOPS.

TO THE EDITOR OF THE "PHARMACEUTICAL JOURNAL."

SIR,—I beg to submit to your notice an economical plan I have adopted in making Tincture of Hop, and which I think might be employed with advantage for other tinctures, the ingredients of which are bulky. The hops, enclosed in a calico bag (as described by Dr. Burton, whose method of making tinctures has been described in the *Pharmaceutical Journal*) and moderately compressed, are placed in a covered shop jar, and the requisite quantity of proof spirit added which will be found sufficient to cover the bag. By placing a piece of tin-foil over the top, providing the lid fit tolerably tight, evaporation will be prevented. After having been macerated the usual time the clear tincture is allowed to drain off, and the bag, with its contents, transferred to the press. From ℥xx. spt. and ℥iij. hops (in which quantity I have made the experiment) I obtained, by using instead of a press, an ordinary lemon-squeezer, ℥xiv. of tincture, the remaining ℥vj. being absorbed by the hops. I then pour six ounces of water over the bag and press out the same quantity, which, presuming the tincture and water to have been equally mixed, will, of course, contain ℥iij. of the former. Six ounces of water are again added to the hop, and pressure employed as before. We have now ℥xij. of liquid containing ℥ivss. tinct. of hops, and ℥vijss. water, the exact quantity required for reducing ℥xijss. spt. rect. to ℥xx *proof*, which may be employed immediately for the next ℥iij. of hops or placed on one side, properly labelled, till wanted.

I remain, Sir,
Your obedient Servant,
WILLIAM COATES.

Wakefield, Feb. 17, 1847.

ON THE DETECTION OF BICARBONATE OF LIME IN SPRING WATERS.

BY ISAIAH DECK, LEAMINGTON.

FOR more than two years I have used the etherial tincture of madder-root as a ready method of determining the comparative proportion of bicarbonate of lime in waters, which have been submitted to me for examination. When a few drops are added to waters, containing a minute trace of the above salt, the rich red colour of the tincture is changed to an orange, varying in intensity with the quantity of bicarbonate present, whereas in distilled water it becomes colourless.

I find also that it is less likely to be affected by the presence of an alkaline carbonate, or feruginous matter, than the alcoholic tincture of logwood, recommended by M. Dupasquier,* while the facility with which this is made obviates the difficulty in procuring the fresh cut logwood, which is essential to the preparation of his test.

USE OF SUGAR IN BREWERIES AND DISTILLERIES.

We have received a copy of the report made by the Board of Excise to the Lords of the Treasury on the comparative value of grain and sugar in brewing and distilling, and its results quite confirm our anticipations. Before the select committee of 1831, "on the use of molasses," various estimates were made of the weight of sugar equivalent to a quarter of malt in brewing. Of course they varied much, according to the allowance made for the quality of the grain and the skill of the brewer—the lowest being 173lb. of sugar to the quarter of malt, and the highest 226lb. The average is 199½lb. It is a general opinion, that "the saccharine produce of barley has been increased of late years by the cultivation of a superior description of grain, and by improved modes of working in breweries;" and the mean (200lb. to the quarter) adopted in the bill brought in the other day by the Chancellor of the Exchequer seems, therefore, to be a safe one for the average of years. The most common estimate is that 180 pounds of sugar is equal to a quarter of malt; but the experiments recently made fix it very near the average struck in 1831; and this seems by far the most likely to be correct. By the 52d George III., c. 3, it is assumed, as to distilleries, that a hundredweight of sugar will yield, upon an average, about 11¼ gallons of proof spirit. The evidence before the committee of 1831 conducts us to the same conclusion. And the experiments now made quite confirm it. The value of molasses in brewing has now been tried by only two experiments; and the general conclusion is that about 300lb. of molasses will yield the same quantity of beer of a given strength as a quarter of malt. The question of comparative value must remain in some degree undecided until it shall be ascertained, in practice, whether the beer brewed from the former necessarily retains any peculiar flavour. In distilling, the common opinion is, that a hundredweight of good molasses will yield eight gallons of proof spirit. The average of ten experiments by the Excise gives about seven and one-third gallons. But, if we allow for the different results invariably obtained in fermenting large and small quantities of wash, it must be allowed that here the common estimate is more likely to be found correct in practice. The Commissioners, however, seem inclined to adopt the *minimum* of 7¼ gallons; and, assuming that the quarter of malt yields 18 gallons, would fix its equivalent in molasses at 278lb. To apply these calculations to the present state of the markets for grain and sugar—First, as to the distiller. The London average price of barley, by Friday's *Gazette*, was 58*s*. 3*d*. per quarter. Its price has since receded from 2*s*. to 5*s*. per quarter in all the principal markets of the kingdom; and it cannot, for practical purposes, now be taken at more than 56*s*., if so much. Admitting, then, that a quarter of barley will yield 20 gallons of proof spirit (a full estimate), one gallon so obtained will cost about 2*s*. 9½*d*. The average price of West India sugar, duty paid, was, last week, about 52*s.* 6*d.* per hundredweight. If one hundredweight yields 11½ gallons of spirit, a gallon of such spirit will cost about 4*s.* 7*d.* And the average price of molasses, at the same time, being about 28*s.* 6*d.* per hundredweight, it follows that if that quantity yields eight gallons of spirit, the cost per gallon will be about 3*s.* 6*d.* But the use of molasses is not yet permitted. It follows that the distiller has no inducement, at present prices, to substitute sugar for grain. As to the brewer, the report before us states the relative values of sugar and malt for brewing, in reference to every price of the latter, from 50*s.* to 90*s.* per quarter. Taking the present price of malt at 80*s.* per quarter, if its equivalent in sugar be 200lb., the value of a hundredweight of sugar to the brewer will be 44*s.* 9*d.*; and if the equivalent be 180lb., as is more commonly supposed, the relative value of the sugar will be 49*s.* 9*d.* We have seen that the average price of West India sugar is now 52*s.* 6*d.* Some sugars are quoted much lower, but no large quantity could be bought for a new purpose at a less price than that stated. At present therefore, there is little, if any, inducement, even for the brewer, to substitute sugar for malt. The free use of molasses in breweries, under the present duties, would undoubtedly yield a profit, assuming that its flavour did not reduce the value of the beer. But this arises from the duty on molasses being lower in proportion to its brewing value than the duty upon either sugar or malt. The abandonment of malt from molasses would therefore cause a loss to the revenue.—*Globe.*

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* *Pharmaceutical Journal*, vol. vi, p. 280.

ON THE CHANGES EFFECTED IN CELLULOSE BY SULPHURIC ACID,

(*Conversion of Cotton into Starch,*)

AND ON THE SOLUBILITY OF IODIDE OF STARCH.

BY H. SCHACHT.

In order to observe the blue colouration of cellulose by iodine, after the application of sulphuric acid, an extremely thin segment of some vegetable part is to be placed on the object bearer of the microscope, and touched with a solution of ioduretted iodide of potassium. The unabsorbed solution is then to be removed by a hair pencil, and one or two drops of sulphuric acid (composed of four parts rectified sulphuric acid and one part water) are to be applied by means of a glass rod to the object, which is to be immediately placed under the microscope. The cellular texture, which appeared brown under the sole influence of iodine, becomes now, upon the addition of the sulphuric acid, blue; whilst the contents of the cells remain brown.

Mulder tried to form starch out of cotton by means of sulphuric acid, but after removing the acid, he always obtained a substance which no longer became blue by means of tincture of iodine. He accounted for this by supposing that the half equivalent of water which the cellulose must yield up in order to become starch is again absorbed on the addition of water. Schacht, on repeating these experiments, obtained a substance which did not become blue by tincture of iodine, but did by ioduretted iodide of potassium. To obtain this substance, twenty grains of cotton were triturated in a porcelain mortar, with six drachms of sulphuric acid, of the above-mentioned strength. In one minute an almost colourless viscid magma was formed. This in fifteen minutes had became thick like syrup. Upon the addition of either alcohol or water, a flaky gelatinous mass was precipitated, which assumed a dark blue colour on the application of tincture of iodine. The acid mixture, without the addition of water, being precipitated by absolute alcohol and washed, or saturated with caustic soda and washed, left a substance behind, which became blue by tincture of iodine, even when the acid had been simply washed out by water. The filtered liquid contained only a trace of dextrin, and no sugar. The washed precipitate neither dissolved nor swelled up in boiling water; the liquid became yellow by iodine. Under the microscope the precipitate had a granular gelatinous appearance. Neither nitric nor muriatic acid effected any change in it; concentrated sulphuric acid dissolved it, as did also a solution of caustic soda. On being dried, the mass became yellow, like horn, swelled up in water, and was coloured violet blue by a solution of iodine.

The substance thus obtained, is without doubt closely allied to amylum, and since a similar body can be obtained from starch, it is to be presumed, that by the metamorphosis of cellulose, the peculiar formation of starch is already exceeded. By the action of the sulphuric acid for a shorter period, the same substance was always obtained, but mixed with undecomposed cotton: by a more prolonged action (*e.g.* for about four hours), a substance was formed which resembled the amyloid of Schleiden. After eight hours continued action of the acid, scarcely any flakes of amyloid were precipitated on the addition of water: the filtered fluid contained much dextrin and very little sugar. When concentrated sulphuric acid was applied to cotton, the mass assumed a brownish colour, and became a thin liquid in half a minute, but it was very slightly made cloudy by water, and was not coloured blue by a solution of iodine. The presence of inulin among the products resulting from the metamorphosis of cellulose was not observed.

The action of sulphuric acid upon arrow-root produces a viscid mucus, which becomes thinner by trituration; precipitating in about twenty-five minutes after the addition of water, a substance which becomes blue by a solution of iodine, and is in general analogous to the starchy substance obtained from cotton. After eight hours' exposure of starch to the acid, the products were similar to those of cotton. The amylum, however, yielded more sugar, whilst the cotton yielded more dextrin and little sugar.

As the blue colouration of starch by iodine cannot depend merely on a fine division of the same, it must necessarily depend upon a chemical combination, which supposition is still more confirmed by the fact, that iodide of starch is insoluble in acids. If common starch be brought in contact with a small quantity of a mineral acid, or with caustic soda ley, and examined under the microscope, it soon appears to be quite dissolved, membranes and all. If, however, dry iodide of starch be mixed with sulphuric acid, and examined in the same way, it remains unaltered even after twenty-four hours; the same is the case when concentrated nitric acid is employed. When treated with pure muriatic acid of 1.95 specific weight, the globules, which were at first dark-coloured, became lighter, and swelled up to almost six times their original volume. Ultimately they became colourless, and covered with crystals of iodic acid, which may be detected by acetate of morphia. Caustic soda ley deprives the iodide of starch of iodine, and then decomposes it. If arrowroot be heated with water and excess of iodine, the iodide of starch does not dissolve, even after many hours of continued boiling; and it is only when the iodine has evaporated, that it swells up and undergoes the usual metamorphoses.

Wackenroder observes, with regard to what has been here stated, that the starchy substance obtained by Schacht is analogous to the amylum, which is sometimes precipitated in the analysis of plants. This is only faintly coloured blue by iodine, and sometimes not until concentrated nitric acid or sulphuric acid have been added. The reason is, that the iodine, instead of combining with the starch, acts upon other organic substances, particularly upon tannic acid, and can only be made free by the addition of a strong acid. If an infusion of galls be added to iodide of starch the colour disappears entirely, but reappears upon the addition of nitric acid. If, however, the acid contain nitrous acid the liquid does not become clear; for either the iodine becomes oxydized, or the starch is destroyed.

In order to separate the iodine from iodides or hydriodic acid, Wackenroder recommends nitric acid, or even nitroso-nitric acid, if it be not employed in too great quantities. When the so-called white iodide of starch is mixed with concentrated nitric acid, it becomes rather intensely blue; but when yellow or bluish nitrous acid is employed, the colour is hardly violet. Chloride of iron effects the reduction of the iodine but slowly, though safely, since an excess does not act injuriously. Chlorine and bromine easily produce the yellow colouration, but destroy it as easily again. Also concentrated sulphuric acid precipitates the iodine easily out of iodides and hydriodic acid. Sulphurous acid reduces it with facility out of iodic acid, but changes it very soon into hydriodic acid. The blue iodide of starch, which is easily decolorized by sulphuric acid, has its colour easily restored by a sufficient addition of nitric acid. In general, in testing with iodine for starch, sulphuric acid deserves the preference of all quoted reagents; and in testing with starch, for iodine, nitric acid is the most suitable.—*Pharmaceutisches Central Blatt*, No. 54, 1846.

ON PATCHOULI.

This herb is derived from a labiate plant, the *Plectranthus graveolens* of R. Brown. It grows in the East Indies, and in the island of Bourbon, from which latter place it is chiefly imported into France. As found in commerce, it is usually cut up, and is sometimes mixed with other inodorous leaves. It is used in France, chiefly by perfumers, and possesses the remarkable quality of smelling much more strongly in dry, than in damp places. If distilled with water, we obtain about two per cent. of volatile oil, which is less fluid than oil of lemons, and has the consistency of olive oil. It is yellowish green, has neither a burning nor astringent taste, and possesses the same smell as the herb. It is almost as heavy as water, so that it sinks but little in this liquid. Besides the volatile oil, this herb contains, according to Stan. Martin, also a resinous green substance (the smell of which differs from that of the vegetable) tannic acid, and an extractive matter, which dissolves in water (*Bulletin Géneral de Therapeutique*, xxxi., p. 40, 41).

According to Martius, *patchouli* is imported into England from Hindostan and Bengal, where it is known as *puchá pát.* The plant was brought about ten years ago from Penang, into the botanical garden of Calcutta, but had not yet bloomed (April, 1841). It is brought by Mogul merchants to the East Indies, where it is partly employed as a perfume, and partly smoked as tobacco. The Arabs use it in great quantities, and they fill their mattrasses and pillows with it, to protect themselves against infection, and to prolong life. The plant in the Calcutta garden is two to three feet high, the branches are obtusely four-cornered, the leaves juicy, somewhat fleshy, and covered, especially on the inferior surface, with a soft, pallid pubescence. The leaves are opposite, petioled, ovate, obtuse, grossly and obtusely lobato-crenate, two to four inches long, the lowermost on the branches subcordate; all the others are cuneate and entire on the base; the upper surface is slightly rugose, the under surface pallid, and with very thick ribs. M. de Hügel says, he has found the plant near Canton, growing wild. The dried tops, as met with in English commerce, are a foot or more long, the larger stalks are cylindrical and ligneous, the smaller ones indistinctly quadrangular. The smell of the dried plant is similar to that of *Chenopodium anthelminthicum*, the taste weak.—*Ann. der Chemie u. Pharm.*, lvii.

[At p. 80, vol. iv. of the Pharmaceutical Journal will be found a more extended account of Patchouli.—Ed. *Ph. Journal.*]

ON THE NICKELS MET WITH IN COMMERCE.

BY J. S. LASSAIGNE.

The increased demand for metallic nickel now so extensively used in the arts, has caused the separation of this metal to be conducted on a much larger scale than heretofore. France receives a considerable quantity of nickel from neighbouring countries, which is imported in the form of small parallelopipedes, more or less regular, and varying in colour from gray to black. A French metallurgist having found these different varieties to afford different results on analysis, I was consulted with the view of ascertaining the relative qualities of the specimens known in commerce under particular denominations.

The analysis which I have made of three specimens of nickel, sold to the metallurgists as pure, shows how important it is to determine the value of the respective specimens before using them for any articles of manufacture. My object in publishing this notice is to put the metallurgists on their guard against the impurities which exist in this product, and which may more or less affect their interests.

Two very impure specimens of this metal, under the name of *German Nickel*, were submitted to me for analysis, which gave the following results :—

German Nickel, No. 1.

Nickel	56.25
Copper	27.50
Iron	12.55
Siliceous residue	3,70
	100.00

German Nickel, No. 2.

Nickel	54.6
Copper	30.1
Iron	11.3
Traces of Arsenic	0.0
Siliceous residue	4.0
	100.0

A specimen of nickel, said to have been made in England*, was also submitted to me which gave the following results :—

English Nickel.

Nickel	73.3
Cobalt	22.1
Iron	1.6
Trace of Copper	0.0
Alumina	2.5
Silica	0.5
	100.0

The results of these analyses show how widely different specimens of commercial nickel vary in composition, and how important it is in every case to determine their value by analysis.—*Journal de Chemie Médicale.*

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* In the neighbourhood of the Potteries, a considerable quantity of nickel is separated from the zaffre used in making the cobalt blues.—Ed. Ph. J.

THE PRECIPITATION OF IRON, MANGANESE, AND NICKEL IN THE METALLIC STATE, BY MEANS OF ZINC.

BY M. POUMAREDE.

In examining the action of zinc on the solutions of persalts of iron, I have remarked that the phenomenon of reduction, with the disengagement of hydrogen, which takes place in such cases, does not commence until the surface of the zinc has changed colour, and acquired a much darker shade than is natural to it; which colour passes to that of ochre when the zinc is exposed to the air. Having further remarked, that pure zinc, which, as Fourcroy has shown, does not decompose water under the influence of sulphuric acid, does, in this case, effect decomposition, and that the reaction does not take place until the aforesaid colouration of the zinc has become manifest, I was naturally led to think that this disengagement of hydrogen, this decomposition of water, might not be caused by the oxidation of zinc, but by the oxidation of a certain quantity of iron, which, in consequence of the antagonism of iron and zinc, in contact with a limited quantity of oxygen, or from any other cause, is removed from solution, and forms an element of the pile which induces the reaction.

And this manner of viewing it, appeared to me the most reasonable, because, in order to explain the phenomena in any other manner, it would be necessary to violate a fundamental principle of chemistry, which recognises a uniform relation between the oxygen of the oxide, and that of the acid, in salts of the same species, whatever may be the oxide, or its degree of oxidation.

Having also observed, on the other hand, that the change of colour in the zinc, and the deposit which forms on its surface, becomes as much more apparent, and the disengagement of hydrogen as much less rapid, as the ferric solution is more concentrated, I was induced to suppose that the affinity of the salt in solution, for water, might in some instances, counterbalance the tendency of the solution to undergo decomposition; as for example, in the case of sulphuric acid of certain degrees of concentration. And I therefore inferred, that by varying the experiments, I might possibly arrive at more conclusive results.

On treating very concentrated solutions of sesquioxide salts, with common or distilled zinc, I readily perceived that while the salt was brought to the minimum of oxidation, there was always a certain quantity of iron reduced to the state of brilliant scales, which did not oxidize by the decomposition of the water, unless the solution was too much diluted, if care was taken to detach them from the surface of the fragments of zinc by frequent agitation.

Besides the metallic brilliancy, which is always, to a certain extent, lost during the drying, the iron thus obtained, possesses all the properties of ordinary iron. It decomposes water under the influence of an acid, &c.

It is necessary to determine with care, in the products of the reaction which takes place, 1st, the quantity of iron reduced to a metallic state; 2nd, the quantity of iron of all the sulphate of protoxide in the solution; 3rd, the quantity of iron lost or accidentally oxidized, and which is indicated by the quantity of peroxide which it has displaced from the liquor. These three numbers once obtained, the first must be added to the last, and the sum subtracted from the second.

The following are the numbers obtained on estimating the products in the state of peroxide :—

Peroxide resulting from the sulphate of the protoxide	16.17
Peroxide resulting from metallic iron	4.32
Peroxide resulting from iron accidentally dissolved	.836

The foregoing numbers sufficiently show that the precipitated iron amounts to one-third of that which remains in solution, and that the reaction may be expressed by the following equation :—

$$Fe_4\,O_6\,6\,SO_3 + Zn_3 = Fe_3\,O_3\,3\,S\,O_3 + Zn_3\,O_3\,3\,S\,O_3 + Fe.$$

On peroxidizing the salt of protoxide which results from the first reduction, a fresh quantity of iron may be precipitated, and thus, by repeated operations, the whole of the iron may be thrown down from the solution.

It is thus shown that zinc reacts on the persalts of iron in a fixed and regular manner, and that it furnishes us with a simple and inexpensive method of procuring iron in a state of chemical purity; a method quite distinct from those hitherto adopted, and which is applicable, not only to this metal, but also to others of the same class. I have succeeded in thus precipitating nickel and manganese from their solutions, and the salts of aluminum have afforded me results of a somewhat similar nature.—*Comptes Rendus.*

ON THE CONDITION OF THE APOTHECARIES IN THE INTERIOR OF AFRICA,

According to Verbal Information communicated by an Empirical Physician from Kartum.

BY X. LANDERER, OF ATHENS.

The condition of the Apothecaries in the interior parts of Africa is truly miserable. In these persons ignorance, cunning, and avarice are conjoined with charlatanry. They are called *Speziarides*, and their shops *Speziaria.* They are generally Jews, Armenians, and Turks, who have for some time, in Constantinople, assisted in a Chemist's shop, or lived with a *Hekim* (Physician), or practised as *Serahs* (Surgeons) in an hospital. No particular permission by the authorities is required for opening a *Speziaria;* the whole licence consisting in the possession of 2000 or 3000 piasters. The shop consists of a more or less spacious wooden moveable booth, in which medicines are exposed to view on wooden shelves in glass vessels, boxes, and sacks. Immensely large white glass bottles with glass covers, on which usually are fixed oil-lamps, in which the oil swims on two or three kinds of differently coloured liquids, contain the best samples of indigenous and exotic products, such as senna, gums, tamarinds, cassia, sarsaparilla, corrosive sublimate, sulphate of copper, corallia, margaritæ, spongiæ, lapides spongiarum, &c. &c. In the middle of the shop stands a little table, on which is a small standing pair of scales, with some small hand-scales hanging up. There are also some *Argelledes*, or Turkey tobacco-pipes, with elastic tubes, for the Hekims and Serahs, who come there either to wait for their patients or pass their time in chatting and smoking. They generally come very early and spend almost the whole day in the shop, sitting cross-legged. As weights, grains of sesamum, or of wheat, and date-stones, are used. The arrival of a patient often serves as a bone of contention and quarrel among the Serahs, each of whom tries to obtain the custom of the patient, who not unfrequently selects him who offers to undertake the cure for the smallest sum. The fee is a quarter of a ducat for a consultation and prescription at the Speziaria ; but when the Hekim goes to the house of the patient, he receives, in the case of a wealthy man, from three to five or ten gold pieces, which a servant presses into his hand. The Speziaris, or Apothecary, who has an understanding with the Hekim, charges not much less for the medicine. If the disease require longer attendance, a contract is made between the Physician and patient at the first visit for attendance and medicine; and half of the sum agreed on is paid down immediately, while the other half remains until the cure is completed. In chronic diseases, some thousands of piasters are asked. An Arab assured the writer of this, that he had to pay 8000 (?) piasters for being cured of jaundice, besides the medicines, which, being prepared of gold, cost him 5000 (?) piasters more. If the patient dies, the Physician obtains nothing more, but must be content with what he received in advance. In cases where a patient has been cured of a very dangerous illness, the Hekim receives, besides his fee, additional presents, consisting of costly confectionaries, tobacco-pipes with amber mouthpieces, aloe-wood, horses with beautifully and richly ornamented trappings, &c. &c. In particular cases, and in the night, a horse is sent with from five to ten servants to fetch the Physician, who frequently receives for such a visit thirty ducats.

All compounded medicines are imported by the Apothecary from Alexandria, Cairo, and Constantinople; but the more simple ones he prepares according to his own pleasure or after a *kital*, *i. e.*, a manuscript which goes down from father to son. A great many objects of natural history are also to be seen in the Apothecary's shop; for example, ostrich-eggs, serpents, ichneumons, crocodiles, lobsters, river fish, elephants'-teeth, sea-shells, coral stones, sponges, pearl-shells, &c., from all of which substances costly medicines are prepared. Thus, from the eggs of the ostrich, perfumed balsams are prepared as antidotes against corrosive sublimate and arsenic; and also a *matsun* (electuarium) against dysentery and rheumatism. From embalmed serpents and toads tinctures are prepared for strengthening the nerves, and in these gold and silver leaves are floating, thus proving that the medicine is prepared from pure gold and silver. From the bones of the ibis a mass is prepared, which is formed in brass moulds, and sold as amulets against the bite of serpents. From the ichneumon is prepared with oils a very strong smelling ointment, which is used for wounds produced by the crocodile. In large glasses, bleached camel's-hair is preserved. This is employed to stop hæmorrhage for wounds, by strewing the finely cut hairs in the wound. Furthermore, the Speziarides prepare from pearls a tincture for contagious diseases, and as a proof that it is actually prepared from pearls, undissolved pearls are seen floating about in glasses filled with some red coloured liquid. The different bezoars form in these countries important articles. Bezoars of the serpent, the crocodile, the buffalo, and the camel, are to be seen of extraordinary size, set in gold, and ornamented with pearls, in the most beautiful glasses, or hanging about in the shop.

The *matsuns* (electuaria) form, among the Africans, one of their principal forms of medicines; and accordingly we find that for each disease there is a particular matsun. Thus, they have matsuns of dates and of bananas against dysenteries, complaints of the chest, &c.

The minor surgical operations, such as bleeding, opening of abscesses, &c., are performed by the Speziarides, and that in the open street, in order to attract the attention of the passers by, who often collect around the Serah or Speziaris and his patient in great crowds, amongst whom there are not unfrequently hired spectators, who cry up the skill of the operator.

Chemical operations are also publicly performed; for example, the distillation of the *liquor Hoffmani*, of some aromatic spirits, &c.

It is very difficult, for foreign physicians (*i. e.* Europeans) to establish themselves in these parts; for they are persecuted by the natives in every possible manner. The latter exert all their power of persuasion to convince the higher classes that European Physicians are not acquainted with the climate, and that they effect the cure by the assistance of Satan, or that they employ poisonous substances, which do indeed possess the power of temporarily checking and apparently curing the disease, but that this, in a short time, breaks out again with augmented virulence. When an European Physician is patronised by one of the European Consuls, and is recommended by him to some of the higher families, whose confidence he contrives to gain, he may succeed in amassing, in a few years, a large fortune; but otherwise he is often scarcely able to gain his daily bread.—(Buchner's *Repertorium*, Bd. xliv.)

THE EDUCATION OF CHEMISTS.

Sir,—Through the kindness of my friend, Mr. Cooper, of Leicester, I occasionally see the Transactions of the Pharmaceutical Society, which afford me much pleasure in reading, to see the efforts you are making to raise the character and qualifications of Chemists and Druggists on a respectable basis. I shall rejoice to see you succeed; but from my knowledge of Chemists and Druggists in the country, you have an arduous undertaking in hand. The great majority* do not even possess a knowledge of the rudiments of Chemistry, and the last edition of the Pharmacopœia is rarely to be found. I had occasion the other day to go into a neatly fitted-up shop at Ashby de la Zouche, and wishing to refer to the Pharmacopœia I had Thompson's Conspectus, of the date 1810, evidently a second-hand purchased book, put into my hand, as the only book in their possession.

I feel certain, that if the Council do not obtain the most extensive parliamentary powers to make bye-laws, requiring a classical education, and the most stringent examination of qualifications, your labours will be nugatory; and especial care must be taken to restrain grocers, hucksters, and others, from interfering with the business.

I remain, Sir, your obedient Servant

Whitwick, Leicestershire, Feb. 2, 1847. R. B. Swinfew.

* [We presume this remark applies not to regular Chemists, but to drug vendors in general, many of whom have no pretensions to the name of Chemists.—Ed.]

COMMITTAL FOR DISPENSING QUACK MEDICINES WITHOUT LICENCE.

Ellis Flitcroft, agent for the sale of "Dr. Coffin's medicines," was charged at the Borough Court, Bolton, on Saturday, under the statute 55 Geo. III., for the better regulation of the practice of Apothecaries, in which it is enacted—"That no person (except such as practised before the passing of the act) should practise as an Apothecary without being duly qualified, and who should have a certificate authorising him so to do." A penalty of £20 is enacted against persons infringing the provisions of this act. The offence is also indictable at common law as a misdemeanor. It was proved that the defendant had sold medicines, particularly in the case of George Greenhalgh, upon whom an inquest had been held; and the defendant was ordered to find sureties to answer the charge at the quarter sessions.—*Britannia.*

EXTRAORDINARY VERDICT AGAINST A CHEMIST.

In the month of July last, Jane Cox, a charwoman at Mr. Rockley's Hotel, Covent Garden, called at the shop of Mr. Hooper, of Great Russell-street, and asked for some medicine for a fellow-servant, who had cramp in her stomach, "requesting that the charge might be reasonable, as the patient was a poor servant." Mr. Hooper's assistant gave a draught containing tincture of rhubarb and opium, and charged fourpence. Instead of taking up the draught, the woman, by mistake, unobserved by the young man, took a bottle of drops which had been prepared by Mr. Hooper for another customer, and which was at a distance of nearly two feet from her. The contents of the bottle were administered, and produced a violent and alarming effect. Medical assistance was procured, and the patient was for some time under treatment. The action was brought against Mr. Hooper to recover damages for the injury thus sustained, which action was tried on the 3rd of February. The following account is condensed from the newspaper report. Jane Cox having detailed the circumstances under which she applied for a draught, stated,

"The assistant poured something out of a bottle, and I paid him fourpence. He gave it me, and I took the draught to the hotel. I gave the bottle to Miss Rockley. I twice asked the assistant how the contents of the bottle were to be given? and he said, 'all together, and that if it was not strong enough I was to come back again.' Having given the draught to Miss Rockley, she administered it. It required some persuasion to induce the plaintiff to take it. After she had taken it she became very ill. Mr. Brookes was then sent for, and he told me to go over to Mr. Hooper. I did so, and I saw him and his assistant. I took the bottle with me. Mr. Hooper said, 'You silly woman, you've taken the wrong bottle.'

"Amelia Rockley (daughter of the proprietor of the New Hummums), deposed, that she had sent Jane Cox for the medicine for Martha Haines, the housemaid. Jane Cox brought a phial, which she delivered to me. There was a label on it, 'the drops,' but no directions about its being taken. Jane Cox told me it was to be taken at once. After Haines had taken a great portion of it, she objected to taking any more. Some portion of it was left. In about ten minutes I observed her foaming at the mouth and in convulsions. I sent for Mr. Brookes: he came, and sent Cox over to Hooper's: Hooper's assistant came. Mr. Brookes went for a stomach-pump, which was applied. Inquiries were made of the assistant by Mr. Brookes. The servant remained ill for a considerable time."

Cross-examined.—"I did not see anything written upon the outside paper, although I looked to see if there were any directions upon it. I never knew an instance of drops being taken but by drops."

Mr. Brookes, surgeon, of Bedford-street, deposed, that he was called in on the occasion, and described the means resorted to. As he desired a second opinion, Dr. Davis was called in. The bill of Mr. Brookes for attendance at the hotel was £7 10s., and his account for further attendance £20. He considered Mr. Hooper a particularly skilful, careful chemist, and accurate in preparing prescriptions.

Dr. Davis gave similar evidence. His fees were four guineas.

Mr. Chambers addressed the jury on behalf of the defendant, and called Mr. Hooper's assistant who stated,

"I made up a draught, and affixed to it a printed label, 'the draught.' I then folded it up loosely in a printed handbill, and put it across the counter immediately in front of Cox, and close to her. She paid for it, and I gave her verbal directions to give it to her fellow-servant as soon as she got home. She stooped down in front of the counter, and was so long in rising, that I resumed an occupation which I had left to serve her. As she left the shop, Mr. Hooper came into it, and said 'What bottle is that?' and I then saw the bottle I had given the woman. We both called after her; she paid no attention and went on. I said, 'She has left her bottle; she will be soon back after it.'

Re-examined.—"The woman did not come back again for two hours. I am quite sure I never gave to her the bottle with the drops, nor observed that it was gone, until she returned."

Mr. Justice Wightman, in summing up, said, that the question was, whether they were satisfied, from this evidence, that the deleterious matter taken into the stomach of the plaintiff, and which had caused no doubt considerable suffering to the plaintiff, was taken by her in consequence of the negligence and carelessness of the assistant of Mr. Hooper? because if it was through his carelessness or negligence, through his mistake—a mistake arising from culpable negligence—then the plaintiff would be entitled to a verdict; or, did they think that the woman, from her own carelessness, had taken up the wrong bottle? There was nothing like an imputation against Mr. Hooper—quite the contrary; but however hard it might be, still according to law, he was answerable for the carelessness or negligence of those persons who were employed by him. There was no doubt but the woman got the wrong bottle, and the real question was, through whose carelessness that arose?

The jury returned a verdict for the plaintiff, damages £150.

DEATH CAUSED BY BITTER ALMOND WATER.

INQUEST AT CAMDEN-TOWN.

On Friday morning, the 19th of February, a very interesting inquiry was made, at the Wheatsheaf, in High-street, Camden-town, before Mr. Wakley, M.P., the coroner, and the assistant coroner, Mr. Mills, as to the cause which had produced the death of Miss Collier, residing at 15, High-street, Camden-town. A *post mortem* examination of the body had taken place on the previous day. The first witness examined was

Mr. John Pounds, a cousin of the deceased. He stated, that the deceased died on Monday last, in the front parlour of her mother's house, at about a quarter past ten o'clock in the evening. About a fortnight before her death he attended with her at Dr. Cronin's, 14, Leicester-place, Leicester-square, and two prescriptions were then given by Dr. Cronin—one to the deceased, and one to himself. He identified the prescription given to the deceased, and which was as follows:—

℞ Spt. ammon. arom. ʒij.
Tinct. opii gt., xvj.
Acidi prusici, Sch. gt. ij.
Aquæ amygd. amar., ℥vj. M. ft. mist.
e qua sumatur coch. ij. ter. die.
Miss Collier, D. C.
Feb. 3*rd.*, 1847.

After delivering it to her an assistant of his dispensed it. A bottle and a box of pills were given to Miss Collier. On the following day he went again with her to see Dr. Cronin, by his desire. Dr. Cronin told Miss Collier, in answer to a question put by her, that her prescription could be made up anywhere. She paid the doctor a guinea for two visits, and the witness did so also. The medicine was paid for besides. The deceased consulted Dr. Cronin for a violent pain in her back, of which she complained. On the night of her death Mr. Johnston, he believed, took the prescription in question to Mr. Corfield, chemist, 47, High-street, to have it made up. He returned with the medicine, of which Miss Collier poured about a table spoonful and a half into a wine glass and drank off. About three minutes after drinking it she said, " Oh! how queer I feel," and appeared to be taken suddenly unwell. She left the room and went out towards the garden, where she fell. He followed her and called for assistance. Mr. Johnston, who was at the time in the area, ran up, and seeing how she was, went at once for Mr. Corfield, who called in Mr. Weathers, the surgeon. Mr. Weathers tried to produce vomiting by using a quill and his finger; then he tried to give her brandy and water, and applied cold water to her face, but all without effect. The stomach pump was not used. The deceased was not convulsed, and her limbs remained motionless, but she breathed hard and groaned. After falling in the garden she lost the power of speaking distinctly. Before taking the mixture she had been quite lively; she appeared in her usual health and spirits, and he was not aware of her being subject to fits.

Mr. George Weathers was next called, and said, that he resided at 41, High-street, and was a surgeon. He was called to see the deceased lady, and reached the house about a quarter to ten o'clock in the evening. She was in the parlour, perfectly insensible and motionless. The pupils of the eyes were greatly dilated, and there was no sense of animation about her. From her appearance he judged that she had taken prussic acid. When he could get the mouth open he tried to excite vomiting, but finding the pulse sinking he used stimulants externally and internally. He applied mustard poultices, and used friction to the extremities; but without avail, for in a quarter of an hour she was dead. From the first moment he saw her he considered the case fatal. Strong ammonia was applied by him to the nostrils, and also put in the brandy, but it produced no effect. He had since examined the body. The lungs were healthy, the heart and large vessels leading from it were sound. The liver, kidneys, and intestines also, were healthy in structure. The stomach was removed for examination. The membranes of the brain were in a natural state, but its surface was somewhat congested, and there was a slight odour of prussic acid perceptible. This was not observed in the abdomen. The blood was fluid everywhere. He was a member of Apothecaries' Hall, but he engaged the assistance of Dr. Scoffern in making a chemical analysis of the contents of the stomach, the structure and coats of which were in a healthy condition. The smell of prussic acid was perceptible. It contained three or four ounces of liquid and some solid matter. The contents were subjected to three tests, all of which proved the presence of prussic acid in a sufficiently large quantity to account for death. He had not the slightest doubt that prussic acid was the cause of Miss Collier's death, for he never saw organs in a more healthy state than hers appeared to be in upon the *post mortem* examination.

Mr. J. A. Johnson, residing at 48, St. Martin's-lane, stated, that on the evening of Monday last, about seven o'clock, he called at Mrs. Collier's house, and finding she was going out between eight and nine o'clock offered to accompany her. Miss Collier requested him to call for her medicine at Mr. Corfield's, which he did. There had been some delay, and Mr. Corfield said he was sorry that it had not been sent, but he had to send to Mr. Bell's, in Oxford-street, for one ingredient. The prescription was then made up in his presence, and he took it home and gave it to the deceased. The bottle produced was the one which contained the medicine. She poured it out in his presence, smelling it at the time and remarking that it was very strong. She then handed it to Mr. Pounds and to him, and he remarked that it smelt very strongly of almonds. He should say that she did not pour more into the glass than one and half table spoonful. He went down stairs before she drank it, but shortly after he was called up, and he saw her lying under the garden door quite insensible. As soon as he saw this he ran for Mr. Corfield. He was absent in search of another medical gentleman when Miss Collier died. He had known her for eighteen years. She was not subject to fits.

The Coroner was proceeding with further proof in respect to the prescription, when

Dr. Denis Cronin came forward and acknowledged it as his, and given by him to the deceased. He stated, that he resided at 14, Leicester-place, and was an M.D., being a graduate of Giessen, Germany, and a licentiate of the Apothecaries' Society, having a London certificate.

The Coroner.—Is there any complaint made in this case against Mr. Corfield ?

Several voices.—Not any.

Dr. Cronin.—Is there any made against me ?

The Coroner.—There certainly is, and it is founded on your prescription.

Dr. Cronin.—I was not aware of this. I have answered to your summons as a witness. Had I known that charges were to be made against me I would have asked the witnesses several questions.

The Coroner.—The witnesses shall be recalled, and you shall have an opportunity of asking them any questions you like.

Mr. Daniel Corfield stated, that he received the prescription produced to him on Monday evening, from Mrs. Collier's house; but being busy at the time he said he would send it down. Not having the bitter almond water, or the compound strychnine powder, which were ingredients in the mixture, he sent his boy with a written paper for them; first, to Mr. Morson's, in Southampton-row ; and, failing to get them there, he sent to Mr. Bell's, in Oxford-street, where twelve ounces of the bitter almond water were procured ; but the compound strychnine powder was not. He had been twelve years in business, and he had never seen either of these two ingredients used medicinally, and he knew of no form for their use in any of the authorised Pharmacopœias. Mr. Bell sent him a form for the compound strychnine powder (taken from *Beesley's Formulary*) but not having the materials he dispensed the prescription without it.

Dr. Cronin.—As I stand here in the situation of one criminally accused, I should have been present at the *post mortem* examination.

The Coroner.—That is quite out of the question. I was not aware that the family of the deceased had omitted to inform you of the complaint against you.

Dr. Cronin again stated that he had been taken by surprise. On Tuesday he was out in the direction of Camden-town, and having called on Miss Collier, was greatly astonished to hear from Mr. Boulton of her sudden death. He intended being present at the inquest, out of respect for the family of the deceased, before he received the coroner's summons.

The Coroner.—As Dr. Cronin complains of being taken by surprise, and as it is most important that a careful analysis should be made of the mixture which it appears caused the death of this unfortunate lady, I think that the inquest should be adjourned.

Dr. Cronin.—There is no necessity for the adjournment of the inquest on my part. I waive my objection of surprise altogether.

Mr. Boulton.—I informed you on Tuesday of the particulars attending Miss Collier's death, and I told you that there was to be a *post mortem* examination.

Dr. Cronin asked Mr. Corfield if he was aware that the bitter almond water sent him by Mr. Bell was a highly concentrated preparation ?

Mr. Corfield replied, that he had never seen the ingredient ordered before ; and a desultory conversation followed, at the close of which,

The Coroner said, I ought to intimate to you, Dr. Cronin, that you are standing in a very serious position. You must already be impressed with that from what you have heard. The deceased, you hear, died from the effects of prussic acid, and you wrote the prescription, which, the chemist swears, was made up as ordered, with the exception that one ingredient was not put in. He also swears that, having been twelve years in business, he never saw the medicine prescribed ordered before, and that it is not named in the London, Dublin, or Edinburgh Pharmacopœia, nor is there any recognised formula for it.

A Juryman.—You admit that the strength of bitter almond water is uncertain. You should, in your prescription, have stated the strength at which you wished it to be used.

The Coroner repeated his previous opinion, that the inquiry should be adjourned to allow time for a careful analysis of the mixture which caused death, and that a friend of Dr. Cronin's should be present.

Dr. Cronin said, he had no desire to adjourn the inquest. He courted the fullest inquiry, and expressed his surprise the prescription made up at his own dispensary should have improved the health of Miss Collier, while that made up by Mr. Corfield proved fatal to her. He quoted Mr. Brande's name as an authority, that a plain bitter almond water was used in certain cases. It was also used in small quantities by confectioners.

Mr. Bell and *Mr. Morson* stated, that the solution used by confectioners was of a definite strength, while the bitter almond water known to chemists was of an indefinite strength, and, as far as they knew, only used externally.

Mr. Weathers was here recalled, and stated that he had been in the profession for fifteen years, and was in the habit of seeing physicians' prescriptions, but had not seen the compound strychnine powder or the bitter almond water used medicinally before.

Mr. Morson said, that his assistant brought to him on Monday night a paper from Mr. Corfield, asking him to supply him with twelve ounces of bitter almond water and some compound strychnine powder. His answer was that he had not got them. He had seen the bitter almond preparation ordered for external applications, but had never known it used internally. He was not aware of the existence of the compound strychnine powder. Ammonia would decompose prussic acid, but the action of it was slow, and as it proceeded the fluid became darker and darker in colour. He kept the bitter almond water occasionally. It was obtained in the distillation of the essential oil of almonds, water being used in the process, and the water becoming saturated with the oil.

The Coroner.—Would the quantity in the prescription be sufficient of itself to destroy life?

Mr. Morson.—That is a question which I am unable to answer.

Dr. Cronin.—If the prescription had come to you in its present shape, how would you have acted?

Mr. Morson.—If that prescription had come to me I would have declined to make it up. I have been in business for thirty years, and there is no recognised form of bitter almond water; there is none mentioned in the Pharmacopœias of this country that I am aware of. It may be in foreign Pharmacopœias.

Mr. Jacob Bell stated, that a paper was brought to him from Mr. Corfield's on Monday, asking for twelve ounces of bitter almond water and the compound strychnine powder. The almond water was written in the Latin form, "Aqua amygdalæ amaræ." One ounce of what he supplied represented sixty-one minims of the Pharmacopœia prussic acid. If, therefore, an ounce of the mixture supplied by Mr. Corfield was analysed, it would probably contain sixty-one minims of prussic acid, besides a sixth of four drops of Scheele's acid. He had been twenty years in his profession, and had never seen such a prescription as that ordered by Dr. Cronin for Miss Collier. He never saw the compound strychnine powder, and had never seen bitter almond water ordered in a prescription internally.

The Coroner.—If the prescription had been taken to you what would you have done with it?

Mr. Bell.—I should have asked who was the physician, and I should have called on him.

Dr. Cronin.—I have sent prescriptions of the kind to your shop, and they have been supplied for several weeks.

A gentleman, who was present as a friend of Dr. Cronin's, confirmed this statement both as to Mr. Bell and Mr. Morson; but it was admitted that the medicine was not supplied by either of them personally, and that the prescription contained specific directions as to the strength.

The Coroner reminded Mr. Bell that apothecaries refusing to dispense were exposed by law to a penalty.

Dr. John Scoffern, residing in Savage-gardens, Mark-lane, said, that he was a graduate of the University of London, and Licentiate of the Apothecaries' Company. At Mr. Weathers' request he had carefully analysed the contents of the deceased's stomach, and also the bitter almond water supplied to Mr. Corfield by Mr. Bell, and the mixture made up by Mr. Corfield for Miss Collier on Dr. Cronin's prescription. Having subjected the contents of the stomach to three different tests, he had ascertained the presence of prussic acid in a quantity large enough to account for death. He had analysed the bitter almond water by weight, and obtained from 200 grains of it 2.7 grains of cyanide of silver. Taking one ounce of the mixture, and estimating it by measure, he found that it contained one-fourth per cent., or more correctly .27 of real prussic acid.

The Coroner.—Now, can you tell us what is the difference between these results in measure?

Dr. Scoffern.—I have not made the calculation, and would not like to say off-hand, but I think it will be found to correspond pretty well with the supposition that the bitter almond water supplied by Mr. Bell was mixed with the four drops of Scheele's acid, as directed by the prescription.

The Coroner.—A doubt has been raised by Dr. Cronin whether more than four drops of prussic acid have not been put into the mixture. We should, therefore, have the relative proportions of prussic acid in the almond water and the mixture settled in the most decisive manner. Dr. Cronin also, I believe, objects to the colour of the medicine.

Dr. Cronin.—If I understand Chemistry right, had the compound strychnine powder, of which Mr. Bell sent a private form, and which was omitted altogether, been used, the black oxide of iron would have made the mixture blue, and the acid would have become inert.

The Coroner again impressed on the jury the importance of allowing time carefully to analyze the mixture and the bitter almond water, in order to determine exactly the relative proportions of prussic acid in each. It was also most desirable, with the view of making experiments, to determine how far the colour of the mixture changed under the decomposing action of ammonia on prussic acid.

After a deliberation with closed doors, it was finally decided that the inquest should be adjourned till Wednesday next, at half past nine o'clock.

At the close of the proceedings the dispensing book of Dr. Cronin was produced, and, singularly enough, in the Latin form for bitter almond water the word "amaræ" was omitted. It was also remarked, that the directions in the prescription for taking the liquid did not specify whether the two spoonfuls to be taken were to be table spoonfuls or tea spoonfuls. The bottle of Mr. Corfield was labelled accordingly.

AT THE ADJOURNED INQUEST,

Dr. Scoffern stated, that he had repeated the experiments with the mixture made by Mr. Corfield, and the bitter almond water; and his former results were confirmed; from which it appeared, that the water contained twenty-seven per cent. of hydrocyanic acid, and the mixture .275 per cent., proving that no more than the four minims of hydrocyanic acid had been added to the mixture. He had tried an experiment with black oxide of iron, which did not produce Prussian blue with prussic acid

Mr. Weathers and *Dr. Venables* supported the above statement.

Mr. Bell confirmed the evidence which he gave at the last meeting of the inquest, and referred to a table which he had published in February, 1846, in the *Pharmaceutical Journal*, shewing the comparative strengths of the bitter almond waters most generally in use on the continent.—See vol. v., No. 8.—The water which he had supplied to Mr. Corfield was very similar to the strongest of the above. He also referred to a paper on the bitter almond water in use in London, which he had published in September, 1841, describing it as being a saturated solution of the oil of bitter almonds in water.—Vol. i., No. 3.—Dr. Cronin had stated that the mixture was not made up correctly, but he had not told them how he would have had it made up. Bitter almond water was not in use as an internal remedy in the medicinal formulas of England.

By Mr. Tennant (with the permission of the Court).—The bitter almond water which he sent to Mr. Corfield was poison. He did not write "poison" upon it, because he was sending it to a chemist.

Coroner.—If all the medicines in chemist's shops were labelled "poison," it would have a terrific effect.

Dr. Venables stated, that he had obtained from Mr. French, in Holborn, some bitter almond water, of which he had analized an ounce, and found it to contain one-fifteenth of a grain of real hydrocyanic acid. He considered this a harmless medicine taken in the dose of an ounce. The water was fetched by his son.

Mr. Venables, junior, stated, that he was a pupil of Dr. Cronin, and had bought the bitter almond water of Mr. French; he paid fourpence for it. He made no enquiries respecting the strength. It was labelled in Latin, and was not labelled "poison." Dr. Cronin's bitter almond water was made by adding six drops of oil of bitter almonds to a quart of water. The compound strychnia powder consisted of two grains of strychnia and half an ounce of sugar. With these ingredients he had prepared the mixture which the deceased took before the prescription was sent to Mr. Corfield. The forms had been given to him by Dr. Cronin verbally. Did not see them extracted from any book. Had been in the habit of using them for about a month, as nearly as he could recollect.

Dr. Cronin produced two samples of bitter almond water which he had obtained from Messrs. Turner and Spratt, of Titchbourne-street. They were prepared according to two formulæ in *Gray's Pharmacology*, one being called aqua amygdalæ amaræ, and the other aqua amygdalæ amaræ concentrata. Dr. Cronin asserted that if the former of these waters had been used in his prescription. it would not have produced any injurious effects.

The Coroner reminded him that his aqua amygdalæ amaræ was different from either of the above.

Dr. Cronin stated that many of his prescriptions with aqua amygdalæ amaræ had been prepared by a chemist in Wardour-street, who had always prepared them correctly.

Mr. Spratt, of Titchbourne-street, admitted that he had sold the two bottles of bitter almond water to Dr. Cronin. He was in the habit of keeping five kinds of bitter almond water. The two kinds mentioned by

Gray, the French, the German, and the Italian. These five waters were kept on his shelves correctly labelled, and were frequently used. He should say that on an average he prepared about two prescriptions in a day containing the bitter almond water.* He stated that several English physicians were in the habit of ordering it: being called upon to give their names, he could not mention the name of one. The bitter almond water made by Gray's milder formula was not poisonous in the dose of an ounce or even two ounces; he had seen a gentleman swallow half an ounce of it for fun, and it produced no effect.

Mr. Morson observed that the aqua amygdalæ amaræ correctly prepared by either of Gray's formulæ would be dangerous in ounce doses; he thought such a statement as the above ought not to go forth in the newspapers uncorrected, as it might lead to serious accidents.

Dr. Scoffern thought the milder of Gray's two preparations would be nearly as strong as that with which the mixture had been made.

Dr. Cronin adduced as authorities in favour of the use of bitter almond water in certain cases as an internal remedy, *Christison's Dispensatory, Brande's Manual of Pharmacy, Thomson's Dispensatory* (an early edition), and *Gray's Supplement.* He also adverted to the general instructions under the head Distilled Waters, in the *London Pharmacopœia* and *Phillips's Translation,* where it is stated that several waters may be prepared by triturating a drachm of the essential oil with a drachm of carbonate of magnesia, and four pints of distilled water. He contended that his prescription had not been prepared correctly by Mr. Corfield, and that he ought not to be held responsible for the result.

The Coroner summed up the evidence with much clearness and ability. Having detailed the general facts of the case he observed that it was proved beyond the possibility of a doubt, that the unfortunate young lady died from the effects of prussic acid; died, in fact, from the medicine administered to her. It had been stated that Dr. Cronin held a degree in medicine from the University of Giessen, in Germany; but that was a thing of no value or authority in this country, and gave the possessor no right whatever to practise medicine in this country; but Dr. Cronin was a legally qualified practitioner, as an Apothecary in London, from a licence from the Apothecaries' Society. In this case he prescribed and dispensed the medicine himself in the first instance, but afterwards told the deceased that it might be dispensed anywhere. Mr. Corfield, not being acquainted with two of the preparations ordered in the prescription, sent, first to Mr. Morson, and secondly to Mr. Bell, to procure the articles he had not in his possession. He could attach no blame whatever to Mr. Corfield. He thought Mr. Corfield did, under the circumstances, what was perfectly right. Not succeeding in obtaining them at Mr. Morson's, the messenger went to Mr. Bell's, and Mr. Bell sent a quantity of bitter almond water with a label on the bottle precisely corresponding with the term in Dr. Cronin's prescription. Mr. Bell knew he was sending it to a chemist. The label bore a Latin name. No message was sent to him indicating for what purpose the water was to be used. He (the Coroner) was not aware that that was necessary. Mr. Corfield, seeing it ordered by a physician attaching his initials to the prescription, doubted not that he was a legally qualified practitioner. Mr. Morson stated, that he had never known bitter almond water used as a medicine internally in the course of his experience, which was of thirty years' duration. Nor had Mr. Bell known that article used as an internal medicine; they had never seen it so prescribed in any physician's prescription. Then, evidence of a contrary kind had been introduced. The son of Dr. Venables had procured some bitter almond water from Mr. French of Holborn. Dr. Cronin had referred to the works of Christison, Gray, Thomson, Brande, and others, to show that bitter almond water was an internal medicine; and without doubt such references were to be found in those works. Those works were not the authorized Pharmacopœia under which it was presumed that medical practitioners acted, and according to which it was presumed the forms of medicine were usually prescribed. However, they were before the jury, who would attach to them that importance which the evidence appeared to justify. Mr. Spratt was also called, with the view of showing that it was a common thing for bitter almond water to be ordered by physicians in London. Mr. Spratt had given an account of five varieties of bitter almond water, of different degrees of strength, kept at his place of business. Mr. Bell had also mentioned eighteen varieties, used on the Continent, the maximum difference of strength, amounting to upwards of fifty per cent. The jury would attach due importance to those statements; and then they would ask themselves the question whether, in this case, there had been a deviation from the ordinary practice of physicians in prescribing; and whether, if so, it was attended with danger, so as to make the offence one of manslaughter; because the law said, if a human being lost his or her life through the negligence of a party, especially where that negligence was of an aggravated character, that party in the eye of the law, was guilty of manslaughter. If Dr. Cronin, in writing his prescription, had done what was usually done, and if he had adopted a practice which might not be attended with danger, the jury would say that the unfortunate young lady had lost her life accidentally, and without default on his part, or that of any other person. But if, on the other hand, after a careful consideration of the evidence, they should find that there had been a deviation from the ordinary practice, they must come to a verdict which would be perfectly consistent with their opinion, and lean neither to the right hand nor to the left, but deal fair and impartial justice. However innocuous bitter almond water might be in certain forms, yet, made up in other forms, it was a potent and deadly poison. In the mixture produced before them, from which the unfortunate young lady had lost her life, it was proved that the dose taken contained sixty minims of prussic acid of the ordinary pharmaceutical strength. Now, it was really most important, and concerned the welfare of the public intimately, that prescriptions should be written in a manner not liable to misconstruction—it was of very great importance that care should be taken by those who had human life placed in their custody; and if care were not taken, it was impossible to say what calamities might not take place. In this case, Dr. Cronin appeared to think that he had not gone out of the ordinary course of proceeding, that he was doing no wrong, and that he was guilty of no neglect in the manner of his prescription. In that view, he (the Coroner) did not think he was borne out by the witnesses examined in the case. He thought the weight of testimony was strongly against the practice which he had adopted. However, on that point the jury would bestow their best attention.

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* Immediately after the inquest we sent to Mr. Spratt's for samples of the five waters, for the purpose of examination. Mr. Turner, the senior partner, stated that he had no bitter almond water of any kind in the house, but was about to prepare some.

The jury then retired, and after being absent nearly an hour, returned into court with a verdict of Manslaughter against Dr. Cronin. The witnesses were then severally bound to appear and give evidence on the trial.

NOTICES OF BOOKS RECEIVED

THE HALF-YEARLY ABSTRACT OF THE MEDICAL SCIENCES, *being a Practical and Analytical Digest of the Contents of the principal British and Continental Medical Works published in the preceding Six Months, together with a Series of Critical Reports on the Progress of Medicine and the Collateral Sciences during the same period.* Edited by W. H. RANKING, M.D., Cantab., Physician to the Suffolk General Hospital. Vol. IV. Published December, 1846. London: John Churchill, Princes Street, Soho; Edinburgh: Maclachlan and Co.; Dublin: Fannin and Co. 8vo. pp. 480.

THE LONDON AND PROVINCIAL MEDICAL DIRECTORY, 1847, 8vo., pp. xxv, 277, 360, 41.

THIS work is much improved and enlarged. Besides lists of qualified Practitioners in London and the Provinces, with their addresses, titles, works, &c., it contains an account of the various Medical Bodies conferring degrees or licences, a list of hospitals, dispensaries, medical schools, and medical institutions, an obituary, an almanac, and other information useful to the profession.

One addition would be a great convenience, namely, a list of provincial towns, with the medical men in each. When visiting a town it may be desirable to know what medical men reside there, but their names being all in one list, those at each place are distributed according as their names occur in the alphabet. The list proposed might be condensed so as to occupy but little space, the titles, &c. being omitted, as they are contained in the other part of the work. It would be more convenient for reference if the pages ran on from one end of the book to the other, instead of beginning again at page 1 four times.

THE MICROSCOPIC ANATOMY OF THE HUMAN BODY IN HEALTH AND DISEASE; *illustrated with numerous Drawings in Colour.* By ARTHUR HILL HASSALL. London: 1847.

SEVEN Parts (each published at 2*s.* 6*d.*) of this work are now before us, and from these a tolerably fair estimate may be formed of the value of the book.

The subject, it cannot be doubted, is a very interesting and important one to members of the medical profession, for whom, we presume, this work is intended. The lithographed plates give very fair representations of the objects intended, and, in fact, constitute the most valuable feature of the work. We may observe that bichloride of mercury cannot be relied on as a test for albumen in the urine; and the author is farther mistaken in supposing that the "earthy carbonates" are precipitated from urine by heat. The precipitate obtained, in the cases referred to, consists of the earthy *phosphates.*

TO CORRESPONDENTS.

R. W. S. (Brighton.)—The instructions given in the Pharmacopœia for making Syrup of Tolu should be attended to, in preference to the plan suggested.

T. B. H.—The solution being too strong part of the quinine separates.

S. V. inquires for a formula for Cardiac Tincture of Rhubarb.

(The above were omitted last month.)

M. P. S.—The formula for "Syrup of Iodide and Chloride of Iron," has not been published.

"A Country Subscriber."—Calomel generally assumes a darkish cream colour by exposure to light.—We have observed this in Howard's Calomel, as well as in that of other makers.

"Associates."—(1.) We can give no information respecting the methods by which tallow-chandlers colour their tallow candles.—(2.) The new edition of Gray's *Supplement* is completed.—At the time of going to press we are not informed what is the price. Being twice as large as the former edition, it will probably be about a guinea.

"A Member" (Brighton).—A candy, called "Livelong," is made with rhubarb and sugar, and some aromatics, which may be varied according to taste. Each person who makes it has his own receipt.

C. wishes to know how Barritt and Co. make their Caoutchouc Polish for Leather?

J. H. (Guildford).—(1.) The evidence respecting the supposed action of camphor on the teeth is at present rather conflicting.—(2.) The terms of admission to the lectures at Bloomsbury Square (to Members and Associates and to strangers) are published in the Advertisements of the School.

"Philo."—We have not seen a good treatise on the subject alluded to.

F. C. inquires What is the best mode of preparing *Lemonade*, to prevent its becoming turbid or ropy, and ensure its keeping for some length of time?

O. P. Q.—(1.) We presume that the reason pulvis acaciæ is ordered in the Pharmacopœia in making mistura acaciæ, is to ensure its being dry, and consequently uniform. The only way to ensure uniformity in colour is to select the gum, and powder it at home, as dark coloured gum is frequently sold in powder, and the colour is not perceived until it is dissolved.—(2.) Yes.

We are authorised to state, that the editor of the *Lancet* did not see the advertisement quoted, page 395, until after its insertion, or he would have refused it.

Advertisements to Mr. Churchill, Princes Street, Soho.

Instructions from Members and Associates, respecting the transmission of the Journal, to Mr. Smith, 17, Bloomsbury Square, before the 20th of the month.

Other Communications to the Editor, 338, Oxford Street (before the 20th of the month, if answers be desired in the ensuing number).

THE PHARMACEUTICAL JOURNAL.

VOL. VI.—No. X.—APRIL 1st, 1847.

THE NATURE AND OBJECT OF A PHARMACOPŒIA.

VARIOUS discussions which we have recently heard respecting the authority of the Pharmacopœia, and the extent to which it is binding on the profession, induce us to offer a few remarks for the purpose of removing some erroneous ideas which appear to prevail on the subject.

The object of the Pharmacopœia is to furnish for the use of the profession a collection of authorized remedies of known and standard composition, and to enable the dispenser to execute with accuracy and dispatch the orders of the prescriber.

The Pharmacopœia may be said to consist of two parts, namely, the MATERIA MEDICA, which is a list of the materials employed in Medicine, and the PREPARATIONS, consisting of these substances variously prepared or combined. Each of these parts is subdivided, according to principles of classification recognised in the profession.

Under the head Materia Medica, instructions are given respecting the forms in which the several articles are used as medicinal agents, and in the case of animal and vegetable substances or products, the genera and species (when known) are stated.

The *Preparations* consist chiefly of products which require considerable time for their preparation, compounds which it is convenient to keep ready prepared, and various powerful medicines, which for the sake of uniformity are ordered to be kept in a known and definite strength, or state of dilution.

The dispenser is bound by law* to obey strictly the instructions contained in the Pharmacopœia, and the medical practitioner when prescribing recognised remedies, is equally bound to adhere to recognised formulæ—in other words, if he adopt the nomenclature of the Pharmacopœia, he must use it in the sense in which it is employed in that work. Much danger might arise from a deviation from this rule. If, for instance, a Physician were to adopt a formula for tincture of opium, hydrocyanic acid, or colchicum wine, differing in strength from the preparations ordered under those names in the Pharmacopœia, the dose administered to his patients would in the same proportion differ from that which was intended.

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* Extract from the Order in Council, published by authority in the London Pharmacopœia.

"And His Majesty doth therefore strictly require, charge, and command all and singular Apothecaries and others, whose business it is to compound medicines, or distil oils or waters, or make other extracts, within any part of His Majesty's kingdom of Great Britain called England, dominion of Wales, or town of Berwick-upon-Tweed, that they and every of them immediately after the said *Pharmacopœia Collegii Regalis Medicorum Londinensis* shall be printed and published, do not compound or make any medicine or medicinal receipt or prescription, or distil any oil or waters, or make other extracts that are or shall be in the said *Pharmacopœia Collegii Regalis Medicorum Londinensis* mentioned or named, in any other manner or form than is or shall be directed, prescribed, and set down by the said book, and according to the weights and measures that are or shall be therein limited, except it shall be by the special direction or prescription of some learned Physician in that behalf; and His Majesty doth hereby declare that the offenders to the contrary shall not only incur His Majesty's just displeasure, but be proceeded against for such their contempt and offences according to the utmost severity of the law."

But, although the Pharmacopœia is issued under authority by the College of Physicians, and is professedly a compendium of the remedies recognised in the profession, the medical practitioner is not restricted to the use of these remedial agents. He is fully at liberty to introduce and prescribe new remedies, in the search of which he may explore the whole range of the vegetable, animal, and mineral kingdoms. In so doing, however, it is incumbent upon him to give explicit instructions in his prescriptions, so as to leave no doubt in the mind of the dispenser as to the nature and strength of the article prescribed. By deviations from the published code, many valuable remedies have been brought before the notice of the profession, and having stood the test of experience have been introduced into subsequent editions of the Pharmacopœia. Even private nostrums have occasionally acquired celebrity and obtained the sanction of the profession.

We offer no opinion as to the propriety of this practice, but simply state the fact that many of the preparations now in the Pharmacopœia, have had their origin in quack medicines; and other compounds are not unfrequently prescribed, the formulæ of which are still kept secret by the proprietors. Some medical practitioners have faith in the efficacy of various herbs not generally in use, others are in the habit of prescribing some pill, tincture, or extract, for the preparation of which they give specific instructions.

In all these cases, no harm can arise, so long as one general rule is strictly observed, namely, that every prescription is written in such a manner that the dispenser cannot fail to understand the intentions of the prescriber. This rule is applicable not only to general practice, but also to practice in hospitals and dispensaries where private Pharmacopœias are adopted, each of which is respectively binding on the parties under its jurisdiction to the same extent that the London Pharmacopœia is binding on the English Chemist; while the Medical Practitioner, under all circumstances, is bound only by the necessity of making his prescription intelligible to the parties for whose guidance it is written.

The terms used in prescriptions being conventional, and the strength of all unauthorised preparations being arbitrary, it follows that a prescription can only be correctly prepared by persons acquainted with the terms and formulæ introduced. It is equally obvious that a prescription containing a preparation for which there is no recognized standard of strength, may be prepared according to the literal instructions, although in a manner widely differing from that intended, on account of the ambiguity or vagueness of the terms employed. Such a prescription may be perfectly uniform and safe in the hands of a dispenser in possession of the requisite private information, but variable, or even dangerous, if prepared in the absence of this knowledge.

When any mischief arises from this cause, it is a question, on whom does the responsibility rest? If on the prescriber, this does not arise from his ordering a preparation unauthorised by the Pharmacopœia, but from the instructions respecting it being ambiguous or indefinite. With respect to the responsibility of the dispenser, we may observe, that even the qualified Apothecary who has passed a strict examination, is prohibited (by the 55 Geo. III, cap. 194, sec. 5)* from deviating in any respect from the instructions of the Physician, and is subject to a penalty, if he refuse to prepare faithfully a Physician's prescription. No allusion is made to the possible occurrence of any error or ambiguity; the Apothecary is not allowed, according to the terms of the Act, to exercise any discretion in such a case. He therefore cannot be legally held responsible for the result, provided he complies with the literal instructions. The Chemist is not obliged *by law* to possess any qualification, or to pass an examination. He therefore cannot be consistently expected to calculate the probable effect of each dose prescribed, or to exercise a discretionary power which is denied to the fully qualified Apothecary. Whatever responsibility rests upon him, is therefore moral, rather than legal, as it may fairly be presumed, that if the law contemplated the exercise on his part of any such judgment and discretion, it would in the first instance have obliged him to become possessed of the requisite qualification.

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* "And whereas it is the duty of every person using or exercising the art and mystery of an Apothecary, to prepare with exactness and to dispense such medicines as may be directed for the sick by any Physician lawfully licensed to practise physic by the president and commonalty of the faculty of physic in London, or by either of the two Universities of Oxford or Cambridge; therefore, for the further protection, security, and benefit of His Majesty's subjects, and for the better regulation of the practice of physic throughout England and Wales, be it enacted, That if any person using or exercising the art and mystery of an Apothecary shall at any time knowingly, wilfully, and contumaciously refuse to make, mix, compound, prepare, give, apply, or administer, or any way to sell, set on sale, put forth, or put to sale to any person or persons whatever, any medicines, compound medicines, or medicinable compositions, or shall deliberately or negligently, falsely, unfaithfully, fraudulently, or unduly make, mix, compound, prepare, give, apply, or administer, or any way sell, set on sale, put forth, or put to sale to any person or persons whatever, any medicines, compound medicines, or medicinable compositions, as directed by any prescription, order, or receipt, signed with the initials, in his own handwriting, of any Physician so lawfully licensed to practise physic, such person or persons so offending shall, upon complaint made within twenty-one days by such Physician, and upon conviction of such offence before any of His Majesty's justices of the peace, unless such offender can shew some satisfactory reason, excuse, or justification in this behalf, forfeit, for the first offence, the sum of five pounds, for the second offence, the sum of ten pounds, and for the third offence, he shall forfeit his certificate, and be rendered incapable in future of using or exercising the art and mystery of an Apothecary, and be liable to the penalty inflicted by this Act upon all who practise as such without a certificate, in the same manner as if such party so convicted had never been furnished with a certificate enabling him to practise as an Apothecary; and such offender

If a patient, having received a prescription, with instructions to take it to a particular place to be prepared, should fail to attend to these instructions, the patient voluntarily incurs responsibility, and runs the risk of the intentions of the prescriber not being fulfilled. But it is possible that a misunderstanding may occur, leading to an accident which no human foresight could have anticipated. In such a case it is difficult to fix the blame on any individual, although it is not uncommon to denounce all the parties concerned in the transaction; those who pass judgment taking a retrospective view of facts which were previously neither known nor suspected by the other parties.

If it were possible to confine the practice of medicine within the limits of the remedies and preparations authorised in the Pharmacopœia, the chances of accident would be diminished, and much inconvenience avoided. But when we consider the progressive nature of medical science, as well as Chemistry, and the period which elapses between the several editions of the Pharmacopæia, (sometimes as much as twenty years) it is to be expected that during this interval many important improvements, if not a complete revolution, may be effected in the remedial agents employed. In the introduction of such improvements, it would be undesirable in any degree to fetter the profession, or to obstruct the progress of science by enforcing a strict adherence to old forms and prejudices. Much advantage, however, would arise from the more frequent revision of the Pharmacopœia, or the publication at short intervals of a supplement, containing such additions as it may be found expedient to introduce.

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so deprived of his certificate shall be rendered and deemed incapable in future of receiving and holding any fresh certificate, unless the said party so applying for a renewal of his certificate shall faithfully promise and undertake, and give good and sufficient security, that he will not in future be guilty of the like offence."

THE ELECTION OF MEMBERS OF COUNCIL.

One of the most important subjects which claims the attention of the political world is the principle of Representation, and the chief aim and object of the most "liberal" reformers is the extension of the elective franchise. In all discussions respecting radical reform, the watchword of that party is "universal suffrage, vote by ballot, and annual parliaments." However unimportant a single vote may appear at an election, the fact is never overlooked that a cause is won by the union of single votes, and that a single elector or a *clique* of electors may bring numerous friends, and consequently much influence, into the field.

The privileges of representation which apply to the community at large, are equally applicable to the case of a chartered body; and the Pharmaceutical Society is an institution constituted in accordance with the liberal principles above alluded to, namely, "universal suffrage, vote by ballot, and annual elections." Every Member has a vote, and has the opportunity of influencing his friends, or discussing with them the merits of any candidate or candidates whom it may seem desirable to support. The Pharmaceutical Society was founded for the purpose of raising the qualification, improving the character, and protecting the interests of our body, besides the establishment of a Benevolent Fund. In all these objects, every Member is interested. The success of the undertaking must depend, in a great measure, on the management of the Society, which is intrusted to the Council for the time being, and this Council is elected by the Members. Every Member is, therefore, interested in the election, and if any dissatisfaction should exist in reference to the proceedings of the Council during the past year, the remedy is in the hands of the Members, who have the privilege of proposing fresh names for election.

We make these observations under the impression that the importance of this privilege is not generally appreciated. For the last three years there has been no contest. Several Members of the Council have retired on each occasion, in order to make way for other Members; the number of fresh Candidates nominated, deducting those who declined to serve, has been only sufficient to fill the vacancies, and in some instances the parties proposed have been with difficulty prevailed upon to accept office.

PROSECUTIONS UNDER THE MEDICINE STAMP ACT.

In every case in which prosecutions are instituted and penalties claimed for alleged offences committed without any intention of fraud, it is of the first importance to clear up any doubts which may exist as to the actual meaning of the terms of the law under which such proceedings are commenced. On a former occasion, when informations were laid against Chemists for selling Gregory's Powder and Essence of Ginger without stamps, we fully investigated the subject, and under the advice of Mr. Garrard, the solicitor of the Pharmaceutical Society, inserted a general explanation of the words of the Act in reference to the cases in question (see vol. v., page 532). It had previously been considered by many Chemists that medicines, the nature, properties, and composition of which were well known, and for which no exclusive right of sale was claimed, were not liable to the stamp duty, which is applicable to secret or patent medicines. But a careful investigation of the Medicine Stamp Act led to the conclusion that all compounds whatsoever, whether secret or otherwise, are liable to the stamp duty, if sold with recommendations as remedies for any disorder. The question was therefore settled, and Chemists were put in possession of the fact that they must either discontinue their recommendatory labels, or affix the stamp.

The recent informations for selling without stamps capsules containing a simple drug, occasioned much astonishment; and we entertain considerable doubts as to the legality of these proceedings.* It has, in fact, been admitted by Mr. Timm, the Solicitor of Stamps, that the writs were issued by mistake, as he intended the communications to be in the form of a circular, cautioning Chemists on the subject. It has also been admitted by the same gentleman that he is doubtful whether capsules are actually liable or not, if sold without recommendation or directions. The ground upon which he had claimed the penalty was, that in the schedule of the Act "Foreign medicines of all kinds, except drugs," are made liable; and he defined the difference between a medicine and a drug to be that the former is in a state ready for use. Now balsam of copaiba is always in a state ready for use, whether it be imported in a cask, a bottle, a seron, or a capsule, and it was contended that if capsules be liable, the other vessels or packages must be equally so. To this argument Mr. Timm did not hazard a reply. It was also argued that Peletièr's Quinine was under the same circumstances as foreign capsules, and Mr. Timm stated that he considered this also liable, if imported in bottles sealed and labelled in the usual way! Being besieged by numerous applicants for an explanation of these points, he recommended the parties to memorialize the Commissioners of Stamps or the Board of Admiralty.

We have been informed, that in several cases the claims for penalty have been withdrawn; in others the parties have compromised, by paying £2; other cases, we believe, are still undecided.

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* See the exemption No. 2, in the Medicine Stamp Act, vol. v., page 532, *et seq.*

Whenever our Members are subjected to prosecutions of this nature, it is the duty of the Council, on receiving official information of the facts, to investigate the subject, employing legal advice, if requisite, for the benefit of the Society; and it is to be regretted, that all the parties informed against did not immediately avail themselves of this means of defence. It is not the object of the Society to offer any obstruction to the administration of the laws, but to obtain a proper understanding on any ambiguous questions, in reference to which the Members are exposed to vexatious penalties; and an official appeal on behalf of the whole body has more weight than a number of individual remonstrances, which cause much more trouble to the authorities, and leave the Members at large in the same uncertainty as before.

As the precise meaning of the terms of the Medicine Stamp Act are in several particulars not understood, either by Chemists or by Mr. Timm himself, the Council have determined to pursue the investigation until all doubts are cleared up, and have for this purpose entered into communication with the Commissioners of Stamps, the result of which will be duly reported to the Members.

If it be decided that the articles in question are subject to the stamp duty, this decision ought to be known as soon as possible. The inconvenience of affixing the stamp is of minor importance when compared with the annoyance arising from the dread of writs and penalties, and the stigma unjustly inflicted on persons who are placed under the imputation of defrauding the revenue, without having knowingly or wilfully committed any illegal act.

MEETING OF CHEMISTS AND DRUGGISTS

ON THE ABOVE SUBJECT.

It happened unfortunately that no application was made to the Council by any of the parties against whom informations had been laid, until the day after their usual meeting, which occurred on the 3rd of March. For although on that occasion three Members of the Council mentioned in conversation that they had been served with writs, no steps were then contemplated, as it was not known that other Members of the Society were in a similar predicament. As soon, however, as it was ascertained that others, and, according to current report, a considerable number had also been served with writs, and that it was impossible to obtain from Somerset House any satisfactory information as to the precise meaning of the terms of the Act, it was considered requisite to adopt prompt measures for the protection of the Members at large.

For this purpose a meeting of Chemists and Druggists was appointed to be held on Thursday, the 11th of March, chiefly for the purpose of obtaining information respecting the several cases in which prosecutions had been commenced. The meeting, however, was not an official meeting of the Society, which, according to the laws, must be summoned by the Council; it having been thought advisable on the present occasion to avoid the delay which this course would have occasioned. Accordingly, the meeting was summoned in the name of the President and Vice-President, and sanctioned by a special meeting of Council held immediately before it.

The **PRESIDENT** having taken the Chair, and stated the object of the meeting, several Members stated the circumstances under which they had been proceeded against.

Mr. **HODGSON** reported that having been served with a writ for the sale of Mothe's capsules, he had obtained an interview with Mr. Timm, and had argued with him at considerable length on the subject; the result of which was that Mr. Timm appeared to be very much shaken in his opinion as to the liability of that article, and advised him to memorialize the Commissioners. This he had done, but had received no answer.

Mr. **BELL** stated that, in consequence of a communication from a Member desiring assistance, he had attended at Somerset House, and seen Mr. Timm. The result of his interview was similar to that stated by Mr. Hodgson.

Mr. **INCE** produced a writ which had been served against him for the sale of Pàte de Regnault. He was aware that this medicine was liable to the stamp-duty, but had no idea that the stamps were not affixed within the wrapper. He considered that in such a case the wholesale agent or importer ought to be liable, and not the retailer.

Mr. **GALLARD** mentioned that some time ago he had inquired of Mr. Timm whether an article which he sold was liable to the stamp. Mr. Timm hesitated in giving a reply, and referred him to his clerk, who informed him that three conditions are necessary to render a medicine liable—1st. The name of the proprietor. 2d. The name of the preparation. 3d. The name of the disorder for which it is recommended.

The **CHAIRMAN** observed, that on one occasion he had applied at Somerset House to ascertain whether seidlitz powders, when exported, required a stamp, and on inquiring for Mr. Timm, was introduced to a gentleman, who informed him that stamps were not necessary. The goods were afterwards seized, and he appealed for redress at Somerset House, mentioning the ground upon which he had acted. He was informed that the party whom he had previously seen was not Mr. Timm, but his clerk, for whose opinion Mr. Timm would not be answerable. The claim for penalty was afterwards withdrawn.

Mr. **Hooper**, of Great Russell Street, informed the meeting, that he had a short time ago enquired at Somerset House whether some lozenges which he sold were liable. He saw Mr. Timm and his clerk. One said he thought they were liable, the other said he thought not, but neither would give a positive opinion.

Mr. **Squire** stated that he had been served with a writ for selling French copaiba capsules without a stamp. It appeared, on examining the package, that the capsules contained tar, and not copaiba, being the capsules de Goudron. He was not previously aware whether they were stamped or not, but considered that any foreign medicines liable to the stamp, should be stamped in the Custom House, as those who retail them could not be expected to break open each package for the purpose of ascertaining whether the law had been complied with.

Mr. **Taylor** had been informed against, for the sale of a French medicine, called Copahine Mêge.

Several similar cases having been mentioned by Members present, a requisition was agreed upon to the effect that the Council be requested to act as might seem expedient, and if requisite, to call a special general meeting of the Society. A requisition having been signed by above forty Members, the meeting was dissolved.

A special meeting of the Council was summoned for Wednesday, March 17th, and a Memorial was addressed to the Commissioners of Stamps, requesting the favour of an interview. The following Answer, addressed to the President, has been received (after the above report was in type):—

"STAMPS AND TAXES, LONDON,

"23*d March*, 1847.

"Sir,—The Board have had before them the letter signed by yourself and several other Members of the Pharmaceutical Society, on the subject of the proceedings taken against certain parties for selling medicines, presumed to be liable to stamp duty,

"In reply, I am directed to state that if the prosecutions to which you refer be (as the Board apprehend is the case) those which were commenced against several persons for the sale of Balsam of Copaiba, enclosed in Capsules, the matter has been already brought under the consideration of the Board by the parties proceeded against, and on their representation of the nature of the medicine, the proceedings have been relinquished.

"The Board therefore do not think any useful result would arise from a further discussion on this subject, in the interview proposed in the Memorial, but if the Memorialists continue to desire such an interview, the Board will appoint a time for the purpose, on being apprised of their wish to that effect.

"I am, Sir, your obedient Servant,

"THOMAS KEOGH, *Assistant Secretary.*"

John Savory, Esq.

The subject will claim the further attention of the Council.

PROCEEDINGS OF THE COUNCIL IN REFERENCE TO PHARMACEUTICAL LEGISLATION.

ALTHOUGH circumstances have prevented the publication of any report on this subject since the close of the last Session, it must not be supposed that the Council have been inactive. The excitement occasioned by the discussion on the Corn Laws last year, and more recently, the famine in Ireland, have of necessity prevented the introduction of any measure relating to Pharmacy into the House of Commons.

We hope shortly to be able to give a detailed report of the steps which have been taken in furtherance of the desired object. In the mean time, we beg to assure the Members of the Society that the subject is not neglected, as some of our correspondents appear to imagine. Several communications have taken place with Members of the Government on the subject, who have expressed their desire to promote the introduction of that Pharmaceutical reform which all parties admit to be desirable on public grounds, as well as important to the medical profession.

The only apparent obstacle to the immediate introduction of the measure into Parliament is the great pressure of business now before the House; but we are in daily expectation of a communication on the subject, which may enable the Council to proceed in the undertaking.

REFORM IN THE DRUG TRADE.

We have received from a correspondent a hand-bill (addressed to the public) having the above title and exemplifying the necessity for reform in the class of persons of whom the author is one. It commences by an allusion to the "excessively high" prices at which drugs are usually sold, which "extortion" is said to be maintained in consequence of the trade being "leagued together by that peculiar species of '*honour*' proverbially existing amongst men of a certain *unmentionable* character."

This tirade is followed by a list of retail prices, of which the following is a specimen:—Tartaric acid, 1*s*. 8*d*. per ℔. Black antimony, 6*d*. Peruvian bark, whole or powdered, 4*d*. per oz. Bitter apple, 3*d*. Prepared charcoal, 1*d*. Dragon's blood, 2*s*. 9*d*. per ℔. Essence of peppermint (English) 6*d*. per oz. Hiera pikra, 2*d*. Jalap, 3*s*. 6*d*. per ℔. Laudanum, 3*d*. per oz. Opium, 1*s*. Milk of sulphur, 9*d*. per ℔. This is not an isolated instance, as we have lately received from other quarters various specimens containing quotations no less remarkable, from which we extract the following:—Turkey rhubarb powder, 1*s*. per oz. The very best tartaric acid, 1*s*. 6*d*. per ℔. Best cream of tartar, 10*d*. per ℔. Fine ginger, 6*d*. per ℔. Ginger-beer powders, 4*d*. per dozen. Black draught and blue pill, 6*d*. Gum arabic, 1*d*. per oz. Good gum, 9*d*. per ℔. Good mustard, 6*d*. per ℔. Refined juice, 1*s*. 1*d*. per ℔. Sp. sal volatile, 3*d*. per oz.

Some of these prices are considerably below what the wholesale Druggist can afford to charge for the articles in quantity. The retail Chemist who supplies them by the ounce, or part of an ounce, must pay rent, taxes, salaries, and various other charges connected with his business, all of which must be defrayed before he can honestly appropriate any portion of his returns to his own maintenance and that of his family. How he can contrive to sell his goods under prime cost, to pay these charges, and to live, is a mystery: which a communication from another correspondent may serve in some degree to explain.

The article to which we allude is a series of extracts (duly authenticated) from the "private Pharmacopœia" of a "Chemist." A few specimens will suffice:—"Opium—℞ Turkey opium 1℔, pea meal beat into a mass, with honey, ½℔, mix." "Laudanum—℞ Opium 1℔, boiling water 9 pints, spirit of wine 6 pints, spruce beer 1 pint, digest and filter." WHITE WAX—℞ White wax, stearine, equal parts, melt together and run into moulds." "FÆNUGREEK POWDER—℞ Linseed cake ground with a little of the genuine powder to flavour it." "LIQUORICE POWDER—Ditto, flavoured with a little liquorice." "NUX VOMICA POWDER—℞ Oatmeal 12 oz, arsenic 4 oz., umber enough to colour it"!! "SWEET SPIRIT OF NITRE diluted with 25 per cent. of water." "SP. AMMONIÆ COMP.—℞ Sp. ammon. co, liq. ammoniæ, p. æq., sp. vini rect. q. s. (to clear it)," &c. &c.

Neither is this an isolated case; we have received similar documents from other correspondents, and have been offered on several recent occasions other evidence of the same nature for publication. This, however, is not the kind of information which we are desirous of furnishing. The above specimens are merely given as an illustration of a system of business practised by a class of persons whom it is the interest, as well as the duty, of our body to expose and repudiate. Such persons are not entitled to the name of Chemists, and they only exist by virtue of the depraved state of the law in this country, which allows every person, however ignorant and disreputable, to exhibit the coloured show bottles, act as a Chemist and Druggist, and bring disgrace and injury on the body with which he claims connection.

PHARMACY IN DENMARK.

ALL Apothecaries' (or Pharmaceutical) establishments in Denmark, are licensed by the government, and, until lately, were hereditary property, the licence, as well as the business, being transferred, at the death of the possessor, to his heirs. The number of shops being limited, their value rose with the increase of the population, and the monopoly thus created, became injurious to the public, and especially to the poorer classes, by raising the price of drugs.

By a recent alteration in the law, the licence to act as an Apothecary, is now granted only for life, and only to those who have proved themselves qualified by passing a severe pharmaceutical examination. The number of licences being limited, a monopoly still exists, although not to so great a degree as formerly.

This is the case throughout the whole kingdom of Denmark, where the Apothecaries are in a more prosperous condition than even the medical practitioners. In the Danish colonies, the same plan has been pursued, and in the island of St. Thomas, with a numerous and wealthy population, the right of selling medicines (which formerly belonged to the medical practitioners) has been conferred on one individual, who enjoys a monopoly of the business.

The origin of this restriction on the practice of Pharmacy, is of ancient date. Before the establishment of medicine as a science in Denmark, or prior to the founding of the University of Copenhagen, the practice of the healing art was confined to the use of medicinal herbs, and was chiefly followed by monks or priests, who, by way of rendering their art infallible, resorted to amulets, exorcisms, ceremonies, images of saints, holy water, alchemy, and astrology. In such hands, and under such circumstances, medicine was not likely to advance, and we find that in the middle ages, it rather retrograded in Denmark, as well as in some other countries. Now and then, some noble-hearted woman, or learned and honest priest, devoted attention to the welfare of humanity, and among the latter may be mentioned the wise Canon of Roeskilde, Henry Harpenstreng, (†1244), who having acquired much of the medical lore of the Greeks, Romans, and Arabs, translated Emilius Macer's poem, *De Virtutibus Herbarum*, and wrote several medical works[*]. In addition to him, may be enumerated, the monk Johannes, mentioned by Saxo Grammaticus[†], as sent for to attend King Waldemar in his last illness (†1182). Bishop Bo in Aarhuus, who had acquired a large fortune by his medical practice[‡], and Bishop Knud in Vesteraas (*Episcopus Arusiensis rivitatis Daciæ* [§],) who, having witnessed the plague in Montpellier, afterwards described it [||]. By means of such men, a knowledge of the medical art as practised in other countries, was introduced into the north. Among these countries, Italy was early distinguished, and Milan, Rome, Venice, and Genoa, especially distinguished among her towns [¶]. The *Confectionarii*, or those to whom the *preparation* of medicines was intrusted, were required to pass an examination in Salerno. The vendors of medicines had shops in all large towns, and were called *Stationarii*. The *Circumforanei* were travelling merchants, who carried the medicines originally prepared in Italy, into foreign countries. These merchants seem to have reached the north at a comparatively late period, as the celebrated Danish bishop Absolon was obliged to have recourse to the monk Stephanus Tornacencis in Paris, who, in 1182, sent him some *Theriak*, "ut humile satis sed xenium, magnis et potentibus viris acceptum quorum et vitæ status fructuosus est in seculo, et exitus a seculo luctuosus.[**]" The demand for foreign medicines becoming greater, the Hanse Towns soon opened large establishments in Copenhagen (1465 and

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[*] Vide *Professor Molbech's Scandinavian Periodical*, 1829.

[†] Saxo calls him, however, "Medicinæ præsumptuosiorem quam peritiorem professorem."

[‡] Vide *H Gram*, p. 270.

[§] Mansa, in *Molbech's Historical Periodical.*

[||] *Tractatus de Regimine Pestilentiæ*, in the Royal Library of Copenhagen.

[¶] Vide *Möhsen Geschichte der Wisjenschaft in der Mark Brandenburg.*

[**] Vide *Riegel's Cont. to History of Surgery.*

1479 [††]) and we read in ancient medical works at present in the University Library of Copenhagen, that the proprietors of these establishments, at this early date, were called *Apothecaries* [‡‡]. The monk Basilius Valentinus, and after him, the renowned Paracelsus, having by their discoveries raised Chemistry to a higher standing, Apothecaries soon became more generally diffused [§§], and the friend and adviser of Christian II. of Denmark, Mrs. Sigbrit, seems to have been the first to advise the king to grant a licence to a Hans Apothecary, in the year 1514. H. Gram tells us, that this Sigbrit, a very clever lady, understood Medicine and Chemistry, and possessed many arcana. Paracelsus, during his journey to the north, formed her acquaintance, and mentions her particularly as "quoque in Dania erat matrona quædam nobilis, quæ omnia vulnera (nervorum vulneribus et iis in quibus ossa fracta erant, exceptis) tertio hausto dato glutinaret." This lady, being considered guilty of witchcraft, on account of her great learning, was afterwards compelled to fly the country in disguise. In 1519, a second licence had been granted by the king, to a certain Dionysius Williamson; but when this unfortunate monarch was obliged to leave his kingdom, he was followed into exile by many of his adherents, among others, by his Apothecaries, and such in those days, was the want of Pharmaceutists, that his successor upon the throne, Frederick I, in vain during many years, sought for another; and Christian III, in 1536, first succeeded in prevailing upon a Dutchman, William Uno, to open an establishment for the preparation of medicines, granting him at the same time, certain privileges *for life*. In 1569, this establishment had got into such bad odour, that it became necessary to have its condition investigated by two Physicians. This was probably the earliest official visitation of Apothecaries in Denmark. Though medicines continued still to be retailed among the people by travelling merchants, it soon became clear that the practice of Pharmacy was not a bad livelihood in Denmark, and several rival establishments gradually arose. Under Christian IV, the privilege, granted at first, only for life, became *hereditary*, but the possessor was obliged to pass an examination before medical men in Pharmacy, and the establishment was subjected to an annual visitation by medical officers appointed by government ‖ ‖. In 1642, Samuel Meyer was created Apothecary to the Court, with the annual pay of 200 Rixbane dollars ¶ ¶. In this spirit, all later licences have been given, and the heirs of Danish Apothecaries, provided they pass the examination, continue, in most cases, with little or no change, to enjoy their monopoly, and form a small but wealthy class.

[††] Vide *H. Gram.*

[‡‡] In the *Codex*, No. 249, we find "Give to him who has too much blood in the head, to eat, Amatasagam magnam, which is found ready prepared in the Apotheca, and to him with a diseased brain, Driapinum, likewise Pillulæ pestilentiales, quæ habentur in Apotheca."

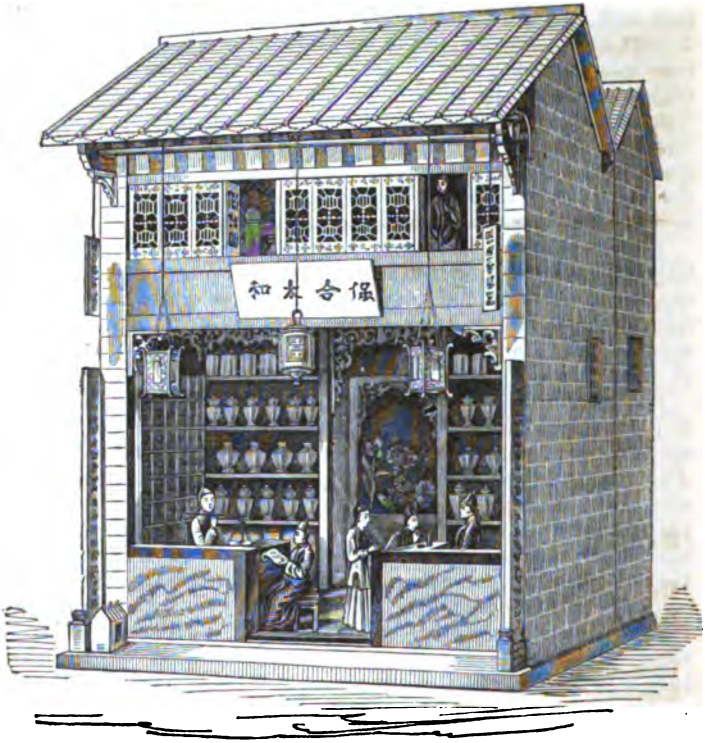
[§§] According to Möhsen, the first Apothecary's licence was granted in Berlin. 1488; in Leipsig, 1409; Ulm, 1406, Stutgard, 1457. In the *Receuil des Anciennes lois Francaises*. tom. iv, page 424, we see that Paris possessed one as early as 1336; Stockholm, in 1550; Upsala. 1648, vide *Beckman's Hist. of Apothecaries*, vol. ii, p. 493. Edward III. gave an Apothecary, Coarsus de Gangeland, £27 *7s. 4d.*, for attendance upon the royal person during his illness in Scotland, 1345. Vide *Anderson's Geschichte d. Handels*, Eas. 2, p. 365.

Persons practising Medicine or Pharmacy, without being regularly qualified, are subject to various grades of punishment, according to the extent of their malpractice. These punishments vary from a simple fine, to imprisonment in a house of correction, or even in a slave prison. The prosecutions are instituted by order of the Council of Health, and are public.

Several Pharmaceutical Societies exist in Denmark, and meet at regular intervals for scientific purposes. Among the Pharmaceutical journals published, may be mentioned, *Trier's Archiv fur Pharmacy*, Copenhagen. There exist regular schools for Pharmaceutical students, with lectures, laboratories for practical purposes, &c. All pharmaceutical establishments are subjected to annual visitations by the Council of Health: they are prohibited the sale of poisons, excepting upon order of a medical practitioner, or certificate of a clergyman. They are, as in Germany, forbidden to sell medicines except when prescribed by medical men, and never undertake to prescribe or give advice. This latter would indeed be without effect, as the line of demarcation between Pharmacy and Medicine is so generally understood, that no person would think of applying to a Doctor for medicines, or for advice to an Apothecary. The pharmaceutical examination is passed before the Professors of the University, and is very respectable. The candidate, after proof of a good practical education, is examined in 1, Natural History, *a.* Zoology, *b.* Botany, and *c.* Mineralogy; 2. Physics; 3. Chemistry; 4. Pharmakognosia; 5. Reading of Prescriptions; 6. Pharmacia specialis; 7. Commercial Pharmacy; 8. Taxation or prices of medicines; 9. Practical proofs in the analysis and composition of medicines.

‖ ‖ Vide *Letter of Christian IV, Physician Arsinæus to the Decanus of the University*, Thomas Tinke, 1629.

¶ ¶ Vide *Danish Magazin*, vol. v, p. 212.



PHARMACY IN CHINA.

In the fifth volume of this journal (page 167) we published an article on Chinese Pharmacy, since which time our Vice-president, Mr. Morson, has received from Canton a correct model of one of the most frequented Pharmaceutical establishments in that city, constructed on the spot by a native artist. We are thus enabled to present to our readers an engraving of a Chinese Chemist's shop.

It is curious to observe how closely the general arrangements of this establishment resemble those frequently adopted in this country. The movable boards and suspended placards set forth the purity of the drugs and the accuracy observed in preparing prescriptions. The model also contains knives and other instruments and apparatus very similar to those used by English Chemists, but it was impossible in the engraving to represent all the objects of interest which the Chinese artist has introduced.

These shops in China are all open, the climate requiring such an arrangement. This custom formerly prevailed in London and in some cities on the continent of Europe. The construction of the Chinese house is peculiar, but we could not give a complete representation of it without a series of architectural plans, which would be foreign to the province of this journal.

TRANSACTIONS
OF
THE PHARMACEUTICAL SOCIETY.

LIST OF MEMBERS, ASSOCIATES AND APPRENTICES (*continued*).

MEMBERS.

Elected February and March.

BATH	*Barnard, John, 27, Brook Street
	Mason, Alfred, 8, London Street
BRIGHTON	Barton, Henry, 77, King's Road
BRISTOL	Berry, Edward, 54, Preston Street
	Tarzewell, Richard, 26, Peter Street
CHRISTCHURCH	Sharp, Henry, High Street
CONGLETON	Hadfield, William, High Street
	Winstanley, James, High Street
EXETER	Owen, George, 2, Queen Street
KIDDERMINSTER	Davis, William, Mill Street
	Steward, William, Bull Ring
LONDON	Davy, Thomas, 7, Dudley Place, Clapham
	*Goodger, David, 31, Regent Street
	Greenwood, Samuel, 143, Whitecross Street
	Grindle, John, 104, High Street, Borough
	Pepper, John, 1, Bedford Street, Bedford Square
	Smith, James S., Mornington Street, Camden Town
LINCOLN	Sympson, Charles, 283, High Street
NEWCASTLE-ON-TYNE	Jones, James, 20, Side Street
SCARBOROUGH	Beckett, John, Newboro' Street
SHREWSBURY	Cross, Wm. Gowen, Mardol Street
WORCESTER	Simmons, Frederick, 61, Tything

MAJOR EXAMINATION.

Nobrega, Gerardo Jose de	**Madeira**

MINOR EXAMINATIONS.

Ash, Samuel Ley	Plymouth
Brown, Edward	London
Edwards, John Baker	Liverpool
Foster, H. I.	London
Trouncer, John Henry	London

REGISTERED APPRENTICES.

APPRENTICES.	RESIDING WITH	TOWN.
Bates, James	Mr. Goodwin	Burslem
Bayley, Joseph Thomas	Mr. Goodwin	Burslem
Bentley, Walter	Mr. Gwatkin	Brighton
Dawes, Andrew	Mr. Ladbury	Wednesbury
Delves, Wm. Henry	Mr. Amoore	Hastings
Donagan, Chas. Hudson	Mr. Squires	Cambridge
Durden, Henry	Mr. Woodroffe	London
Egan, Carberry C.	Mr. Coverley	Scarborough
Gange, Osmund M.	Mr. Gange	London
Marrack, G. M.	Mr. Searle	Crediton
Steward, Alfred	MrP ortelo	Farnham
Strouts, Edmond	Mr. Tadman	Sittingbourne
Wheatley, Charles	Mr. Hall	Huddersfield

PHARMACEUTICAL MEETING,

WEDNESDAY, MARCH 10th, 1847.

MR. BELL IN THE CHAIR.

ON THE CARDAMOMS OF ABYSSINIA.

BY JONATHAN PEREIRA, M.D., F.R.S.

Two or three centuries ago, a large scitamineous fruit was employed in medicine, on account of the aromatic qualities of its seeds, under the name of *Cardamomum majus*. Cordus[*] describes it as being a fruit like Melligetta, but smaller, turbinate like a pear, and having seeds which are agreeably aromatic. The fruit, he says, has been erroneously confounded with the Melligetta, but the flavour of the former, he adds, is much less hot than the latter, and is grateful and pleasant; whereas, the taste of Melligetta is very acrid, and like pepper. He furthermore tells us, that both the fruit and seeds of Cardamomum majus are brought from Syria and Egypt.

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[*] Valerii Cordi *Historia Stirpium*, lib. iv., p. 195. 1561.

This fruit has long since disappeared from commerce; but specimens of it are occasionally to be met with in some old collections of Materia Medica, and in that of Dr. Burgess, in the possession of the Royal College of Physicians of London, are several fine capsules of it, marked "*Cardamomum maximum Matthioli.*" One of these I have described and figured in the *Elements of Materia Medica*, p. 1026, fig. 195, 2d edit., and believing it to be identical with the *Amomum angustifolium* of Sonnerat † and of Sir J. E. Smith ‡, and the *Amomum Madagascariense* of Lamarck §, I have adopted Sonnerat and Smith's name of *Amomum angustifolium.*

This cardamom is one of the fruits which, by some later writers in the Materia Medica, have been confounded with *Melligetta pepper* or *grains of paradise.*||

About four years ago I received from my friend Dr. Royle some cardamoms which, he informed me, came from Abyssinia. In a letter which I have subsequently received from him, he says, that they were—

> "brought strung on a string, and were sent to the India House by Major Harris's embassy. They were described as being carried to Abyssinia from Guraque, which is more to the southward, and where they might easily be produced. But I believe there is also some commerce up the rivers still further south, so that they might be produced even in Madagascar, and be sent as a spice to Abyssinia. But I should suppose they were more likely to be the produce of the interior, and probably of Guraque as they are called *Guraque spice.*"

These cardamoms I found to be identical with the fruit, which I had figured and described in my *Elements of Materia Medica*, under the name of *Amomum angustifolium.* The specimens, however, were scarcely so large as those I had previously seen, and were perforated for a string, apparently for the purpose of hanging them up to dry.

About a year and a half ago I received from Mr. Charles Johnston, the author of *Travels in Southern Abyssinia*, other specimens of the same fruit, and subsequently obtained from him the following information respecting them:—

> "I hasten to answer your inquiries with regard to the cardamons; and first of their place of growth. This I was given to understand was chiefly in the deep valley of the Abiah branch of the Bahr al Azzareeke, those you have received coming from that part of it which separates Guraque from Zingero. I have heard though that, still further to the south, they are found in greater quantities, inasmuch so, that the locality has received

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† *Voyage aux Indes*, t. ii., p. 242.

‡ *Rees's Cyclopædia*, vol. xxxix., art. *Amomum.*

§ *Encyclopédie Methodique*, div. *Botanique.*

|| See my paper on this subject in the *Pharmaceutical Journal*, vol. ii. p. 444.

the name of the spice country, and as it was represented that extensive forests (? jungle) of the plant which produces them existed, we may presume, I think, that this land of spices is their indigenous country. As to the mode of preparing them for use, from the opportunities I had of observing the attention paid to cultivation in Abyssinia, I should suppose that it was the same in Guraque, and that the simple course of gathering the fruit, and drying them in the sun was all the inhabitants did to preserve the produce of their spice harvest. I must not forget though, that for convenience of carriage and the usages of trade, each cardamom capsule is perforated and strung upon a strong thread in numbers varying from forty to fifty, for which, in the markets of Shoa, a distance of five day's journey, the priest merchants of Guraque can obtain one piece of salt-money, or about twopence-halfpenny in English money, but which, it must be observed, is sufficient to purchase at least two pecks of wheat in that country. The Abyssinians seldom use the cardamoms except for medicine. Its employment in domestic economy is certainly not so general as the nutmeg is with us."

Within the last few days I have received some specimens of the same fruit, under the name of *Korarima*, from Dr. Beke, to whom I am farther indebted for the following information respecting this cardamom :—

"The *Koraríma*, in Arabic called *Khéil* or *Khil*, is brought to the market of Báso, in Southern Abessinia, from the country of Túmhe, in Wallégga, an extensive level, and in great part desert region, which stretches from the river Dedhésa, the upper course of the Bahr el Azrek, or Blue River, as far as the Bahr el Abyad, or true Nile to the west, and the Gódjeb, a tributary to the latter now, to the south; northward it is bounded by the country of the Dínkas.

"The position of Túmhe is somewhere about 9° N. lat. and 35° E. long. Túmhe is usually known among the native merchants as "*the country of the Koraríma*;" and I have a map drawn by one of them in which it is so marked. But I was assured by others that it is not the growth of that country, but comes from other portions of Wallégga beyond it. As the land slopes westward from the high mountain country of Abessinia down to the valley of the Nile, I conclude that it is the produce of districts possessing an absolute elevation of probably not more than about 3000 or, may be, 4000 feet. This is in lat. 8° or 9° N.: nearer, that is higher up, than Túmhe it certainly is not found.

"The *Koraríma* is brought in considerable quantities by the way of Báso to Abessinia, in which country, as likewise among the Gallas further to the south, it is used as a condiment. I purchased at Báso one hundred heads for one *ámule*, a piece of rock-salt, of which about twenty are current there for one Austrian convention dollar, worth about 50$^{d.}$—consequently forty for one penny sterling. As a stranger I probably paid the *full* price. It is also taken to Massówah, the port of northern Abessinia, on the Red Sea, from whence it is exported to India. Dr. Rüppell was informed at Massówah that the annual export is of the value of one thousand dollars—about £200 sterling.

"The specimens sent you are not so large as some that I had; but I believe they are of a fair average size.

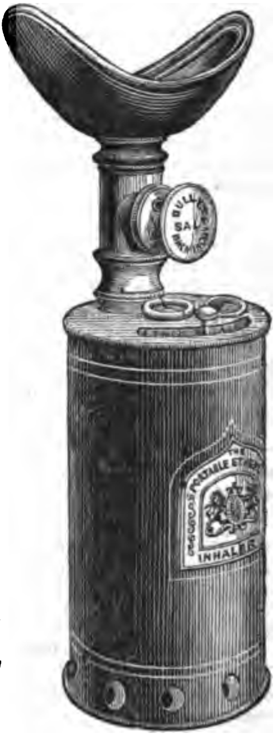
"I should add, that *Koraríma*, is the Galla name, which is likewise used in Abessinia. The accent is on the penultimate, and the vowels being sounded as in Italian, the name is pronounced as if written in English *Korahrēēma*.

"With respect to the Arabic name *Khíl*, it should be remarked, that according to the Kamús, it means "Rue," or rather *Peganum Harmalah*.

The word does not occur in Ibn Baïtar's *Materia Medica*, and would appear indeed to be but little used by the Arabs. Nothing, however, is more uncertain than the real value of Arab names of plants, and several plants of very different characters, are no doubt to be met with under the same appellation. Nevertheless, the fact is certain, that at Massówah, and in the Red Sea, the *Korarima* is designated *Khéil* or *Khíl*, by the Arabs."

This fruit is best distinguished from other large scitamineous fruits, with which it has been confounded by the characters of its seeds; which are devoid of the fiery peppery taste of the grains of paradise; are not highly polished, dark brown, and oblong, ovate, or cylindrical, like the seeds of the *Amomum Clusii*; nor are they greenish grey or lead-coloured, like those of *Amomum macrospermum*. But they are mildly aromatic, somewhat smooth, compressed or angular, and pale olive brown.

SALT'S PORTABLE ETHER INHALER.



The advantage of this inhaler consists in its simplicity and portability, together with the facilities afforded for modifying the potency of the vapour admitted to the lungs.

This is accomplished by means of a revolving plate with corresponding openings, fitted into one end of the cylinder or body of the apparatus, and by the alternate admission of air and ether, the vapour may be regulated without the necessity of removing the apparatus from the mouth.

The other end of the cylinder is fitted with a revolving tube which also has corresponding apertures, regulating the quantity of air admitted. Both ends close to prevent evaporation when the apparatus is not in use.

It is a convenient size and shape for the pocket; the valves are firmly attached to the apparatus itself.

Directions for use.—Pull out the top *A*, and pour the ether upon the sponges in the cylinder *B*, and replace the top *A*. Expose the air-holes *C* either partially or entirely, the apparatus is then ready for use.*

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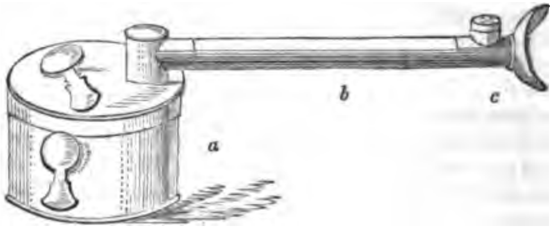
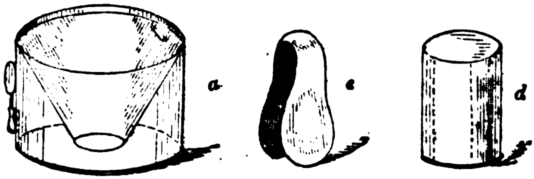
* Manufactured by M. Salt and Son, 21, Bull Street, Birmingham.

GALLARD'S PORTABLE ETHER INHALER.





a, a cylindrical tin box, the lid of which contains a key for admitting air in almost direct communication with the tube. The box itself has also a key for the admission of air in closer connexion with the ether, and a lining of tin of a conical shape (like the patent inkstand) so as to allow two or three ounces of ether to remain in it without spilling. A small tube inside enables the ether to be poured back if not wanted. *b*, a tube of sufficient calibre to admit of a two-ounce bottle of ether to be packed in it, for which it also forms a case. *c*, mouth-piece and valves. *d*, one of the caps to tin tube used as a bottle-case. *e*, brass clipper for closing the nostrils. All parts of the apparatus fit into the box, with the exception of the tube.

The larger key when opened, supplies vapour of ether in a dilute form; the smaller, a vapour much more concentrated. The keys may be allowed to close during each expiration, and should be opened at the discretion of the operator previous to each inspiration. For supplying pure vapour of ether, it is only necessary to leave the keys closed, and apply a piece of lint or rag dipped in hot water, to the bottom of the box.

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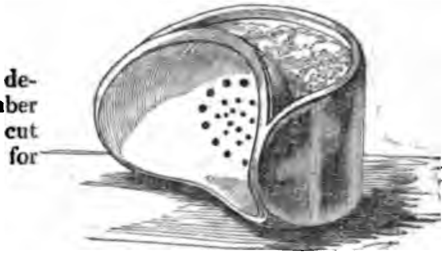
* The above inhaler is manufactured by Jones and Co., 201, Strand.

ORIGINAL AND EXTRACTED ARTICLES.

SMEE'S PORTABLE INHALER.

This instrument is described in our last number (page 424); but the cut was not ready in time for publication.



TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

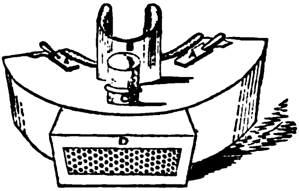
SIR,—I was not aware until yesterday, when chance threw the last number of your journal into my hands, that any apparatus had been contrived for the inhalation of ether simply through a sponge. I find, however, in your March number, a slight notice of one by Mr. Smee, and as I had previously to this notice, contrived, and had made one for the same purpose, I forward the drawing and description for your use, hoping that it may be of service, and subscribe myself,

Yours respectfully,
N. S. HEINEKEN.

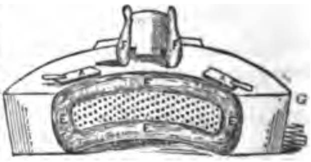
Sidmouth, Devon, March 10, 1847.

DESCRIPTION.

The apparatus is made of tin, and much resembles the respirator (which indeed suggested it). Its dimensions are five and a quarter inches at the longest part, from *G* to *G*, one and a quarter deep; from the front to the back of the circular part, two inches, and the depth of the square projection in front, half-an-inch. The interior is thus constructed:—At the distance of one-eighth of an inch from the front, is a semicircular piece of ordinary pierced zinc, and at a quarter of an inch from this, is a similar piece, thus forming two diaphragms; the piece first named is soldered to a strip of tin one eighth of an inch deep, and this is again soldered to the bottom of the apparatus, thus preventing the ether from entering the mouth. Through the upper part of the apparatus, and between the two diaphragms, are cut two oblong apertures, and upon them are two valves, *A A*. These valves allow the breath to pass freely in expiration, and afford the operator the means of diluting the ether if required, by simply placing his finger upon the key at the extremity. A nose-spring, *B*, prevents breathing by the nostrils. A tube, soldered at *C*, and stopped by a cork, &c., furnishes the means of supplying fresh ether when required. At *D* is the front piece—this also has a diaphragm of perforated zinc, about half-an-inch wide, by two inches long, and to the face is fixed a valve simply of stout white leather, and opening inwards, for the purpose



of respiring ; at the distance of half an inch from this, is another plate of perforated zinc, resting against a stop, against which it is kept by the front *D*, which slides out at pleasure, the slide being half-an-inch long. Beyond this, the whole chamber of the instrument is filled with sponge, having a small piece of tape attached to it, for its ready removal when required. The object of the second diaphragm, is to prevent the sponge or ether from interfering with the valve in *D*. The dimensions of the square front, are two and a half inches long, by one and a quarter wide. The advantages of this construction appear to me to be, that the respiration is as free as if no apparatus were attached to the mouth—it is natural, in consequence of the mouth being freely open, whereas, when a tube is used, the patient *sucks*, rather than *inhales*. The construction is very simple, so much so, that any tin-worker can make it, the valves are easily removeable, and readily renewed if required—means are given for diluting the vapour, for supplying ether, and the front valve prevents loss by evaporation during expiration. If desired, the valves *A A* can of course be protected by a guard, and by an elastic band, it can be attached to the mouth without the aid of an assistant. Moreover, it can readily be carried in the pocket, from its comparatively small size.

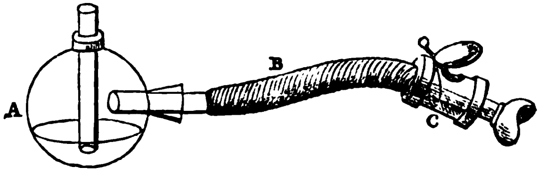


The apparatus was made under my direction, by a workman, by name Farrant, of Sidmouth, who has my full permission to construct them for any person who may deem the contrivance worthy of notice. I omitted to state that the apparatus has pads around the mouth *E E*, and also around the nasal spring, *F F*.

P.S. I have omitted to mention, that in the interior, the dimensions are reduced, a piece of tin being soldered in, so as to cut off about an inch at each corner, in order to lessen the size of the sponge, and consequently the quantity of ether, and I doubt not but that a still smaller apparatus on this plan would be found effective. For the front valve, if preferred, *oiled silk* can be used, being lighter than leather, but it may perhaps adhere occasionally to the zinc plate, which is to be avoided.

HOFFMAN'S ETHER INHALERS.

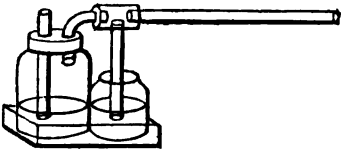
No. 1.



A, is a common tubulated receiver containing ether, having large apertures, and can be warmed by a spirit lamp or by a water-bath. A tube from the upper aperture descends below the surface of the ether.

B, a flexible tube of spiral wire covered with leather, about a foot long and five-eighths of an inch internal diameter, attached to a brass tube which enters a little way into the receiver. C, a portion of a common lamp-glass cut off with a hot wire, having at either end a disc of hard wood, with grooves turned to fit the glass, to which it is luted. The flexible tube and that to which is attached the mouth-piece, are screwed into these discs respectively. A hole is drilled on the upper surface of the glass cylinder, and enlarged by a round file lubricated with turpentine, to about five-eighths of an inch in diameter. Over this hole and on the end of the wooden disc inside the glass are valves consisting of a piece of oiled silk or thin calf leather, cemented on to a ring of wire or brass much larger than the aperture to be covered, and secured to the wood by means of pins passing through a projecting hinge of the leather. The effect of the brass rings is simply to keep the edges of the valves from collapsing. The brass ring of the outer valve is continued so as to form a lever by which the valve may be kept open, when necessary, by the pressure of the thumb of the operator.

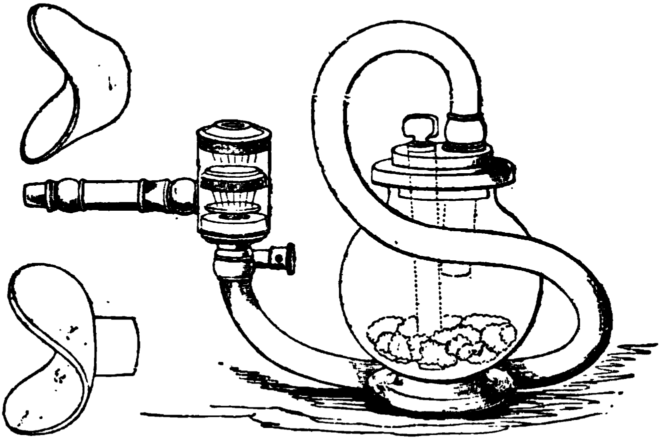
No. 2.—Hydrostatic Ether Inhaler.



A small wide-mouthed jar containing ether, closed with a bung, and perforated for two glass tubes, one of these tubes dips one-eighth of an inch below the ether, the other just penetrates the bung, and is bent at right angles, ending in a perforated wine cork. At the termination of this tube an aperture is made in the cork at right angles with the former, into which a tube is fitted, which terminates in a saucer or jar containing water. Another tube meets this last in the cork in a direction continuous with the horizontal portion of the last tube. The glass vessels fit into a small wooden box or tray. When a slight effort at inspiration is made at the extremity of the last-mentioned tube, there is a tendency to a vacuum through the whole of the apparatus. The fluid in the saucer is pressed by the atmosphere up into the tube which dips into it; at the same time the atmospheric pressure is exerted on the surface of the fluid in the tube which dips into the ether. This becomes depressed exactly as much as the water is elevated in the other tube. It is obvious that, on continuing the inspiration, the atmospheric air will pass up through the ether, become saturated with its vapour, and pass into the lungs of the patient. The converse of this takes place on expiration. The air in the apparatus is condensed, the ether is forced a little way up the tube in the jar, while the expired air escapes in bubbles through the water. A flexible tube and mouth-piece may be substituted for the straight tube.

Margate, March, 1847.

GILBERTSON'S INHALER.*



The principle of this instrument has been already described (No. 8, page 355). Subjoined is a cut of the complete apparatus, with the two forms of glass mouthpiece.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

SIR,—I SHALL be obliged if you will allow me, in reply to an observation in the last number of your journal, to state that the resemblance between the inhaler of Mr. Jeffreys, and that I have introduced for the vapour of ether, is not a coincidence, but is the result of my previous acquaintance with the former, and approval of it; and that I have never failed to mention the circumstance when saying or writing anything about the apparatus. The first notice of it in print appeared simultaneously in two medical journals, and contained the following words: "The instrument which Mr. Ferguson, of Smithfield, was making for him, was on the plan of the inhaler of Mr. Jeffreys, with some alterations and additions." (*Med. Gaz.* Jan. 22, p. 156, and *Lancet*, Jan. 23, p. 99.)

The object of the apparatus is to regulate the proportion of vapour in the air by regulating the temperature; and to effect this, I take advantage of the capacity for caloric which there is in two or three pints of water, and of the conducting power of metal of which the instrument is formed. The form I have adopted, is a matter of detail to enlarge the surface of ether exposed to the air.

The table you honoured me by publishing in the February number, is correct for ether, which is not free from alcohol, and boils at 104°. To make it correct for washed ether, which boils at 100° four degrees must be deducted; for instance, for 40° read 36°, and so on, and for washed ether deprived of its water by potash, and boiling at 98°, six degrees must be deducted. As I have stated elsewhere, I made use in constructing that table, of the formula for the elastic force of the vapour of ether, by Dr. Ure, in his paper on Heat, in the *Philosophical Transactions* for 1818; having ascertained by experiments, that it could be used with correctness for that purpose.

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* Made by Mr. Gilbertson, Ludgate Hill.

I remain, Sir, your obedient servant,
JOHN SNOW, M.D.

54, *Frith Street, Soho, March 5th*, 1847.

[We regret the observation we made last month, which, from Dr. Snow's statement, appears to have been erroneous.—ED.]

FATAL RESULT AFTER OPERATIONS PERFORMED UNDER THE INFLUENCE OF ETHER.

THE habit of jumping at conclusions is a serious obstacle to the progress of science, especially in the medical profession. A new remedy which has been found successful in a few cases, is not unfrequently extolled as a panacea, and employed *ad libitum*. A few failures destroy the charm, and it subsides as a nine days' wonder. Almost every remedy or discovery of any importance in the profession must pass through these two stages, which may be compared to the boiling and the freezing point, before it assumes a temperate medium; in the same manner as a railway speculation comes out at a premium, falls to a discount, and then rises to par, or finds its proper level. These remarks are particularly applicable to the ether mania, which, in the first instance, created so much excitement, that a reaction was inevitable. Two or three cases in which death has ensued after operations, have placed the remedy in jeopardy and threatened to lead almost to its prohibition under the authority of the coroner.

The cases which have appeared to occasion the greatest interest and apprehension, are the operation of lithotomy performed at Colchester, on the 12th of February, and the removal of an osteo-sarcomatous tumour from the thigh of a patient at Grantham, on the 9th of March. In the latter case an inquest was held, and the jury returned a verdict to the effect that the deceased died from the effects of the vapour of ether, and not from the effect of the operation, or from any other cause.

This is rather a strong verdict from a non-medical jury; but it is not our intention to discuss its merits, although we have heard several medical practitioners who have read the evidence, express doubts on the subject. The question of the greatest importance is how far do the above cases and some others which have terminated unfortunately militate against the use of ether as a means of alleviating pain? In order to decide this question statistical evidence should be obtained, showing whether the average of deaths after operations be or be not increased when ether is employed.

Further experience is also desirable respecting the symptoms of the several stages of etherisation, the circumstances under which this agent is calculated to prove prejudicial, and the best mode of counteracting the effects when carried too far. Until these points have been more fully investigated, the subject will be involved in some degree of doubt and anxiety.

INHALATION OF THE VAPOUR OF ETHER IN 1818.

The following notice of the effects of inhaling the vapour of ether is extracted from the *Quarterly Journal of Science* for 1818, and is supposed to have been from the pen of Professor Faraday:—

"When the vapour of ether mixed with common air is inhaled, it produces effects very similar to those occasioned by nitrous oxide. A convenient mode of ascertaining the effect is obtained by introducing a tube into the upper part of a bottle containing ether, and breathing through it; a stimulating effect is at first perceived at the epiglottis, but soon becomes very much diminished, a sensation of fulness is then generally felt in the head, and a succession of effects similar to those produced by nitrous oxide. By lowering the tube into the bottle, more of the ether is inhaled at each inspiration, the effect takes place more rapidly, and the sensations are more perfect in their resemblance to those of the gas.

In trying the effects of the ethereal vapour on persons who are peculiarly affected by nitrous oxide, the similarity of sensation produced was very unexpectedly found to have taken place. One person who always feels a depression of spirits on inhaling the gas, had sensations of a similar kind produced by inhaling the vapour.

It is necessary to use caution in making experiments of this kind. By the imprudent inspiration of ether, a gentleman was thrown into a very lethargic state, which continued with occasional periods of intermission for more than thirty hours, and a great depression of spirits; for many days the pulse was so much lowered that considerable fears were entertained for his life."

A MODE OF REMOVING NITRATE OF SILVER STAINS FROM LINEN.

Dear Sir,—Medical men, in the habit of using the nitrate of silver extensively as a remedial agent, must have frequently heard loud complaints of their patients' linen having been indelibly stained and spoiled, by some accident having occurred during its use, and in many cases patients have refused to employ these preparations in consequence of the awful destruction of linen which they occasion. I have, therefore, very little doubt that the following observations will prove most acceptable to the numerous readers of your widely circulated journal:—

These dark stains consist of finely divided *metallic silver*, in intimate union with the tissue of the cloth; had they been oxide of silver any diluted acid would have dissolved them, but nitric acid alone produces any effect, which of course cannot be employed from its powerfully destructive effects upon the linen fabric.

Iodine immediately converts them into iodide of silver, which is instantly dissolved by a solution of hyposulphite of soda, and the cloth remains as white as when first issued from the bleaching house, and as firm and durable as ever. The best mode of employing this substance is to strain the spotted linen over a basin of hot water, and then to let fall a few drops of tincture of iodine upon each spot previously moistened with water; then instantly to pour sufficient of the solution of the hyposulphite of soda to dissolve the iodide produced, and immediately to immerse the spot in the water beneath; to wash out and cleanse the tissue at once from the stain and the chemical reagents employed. The tincture of iodine of the London Pharmacopœia is the strength I use; and one drachm of hyposulphite of soda dissolved in two ounces of water will make an excellent bleaching liquid.

I am, dear Sir, yours most obediently,
WILLIAM BIRD HERAPATH, M.B.,
Of London University, SURGEON, &c.

Bristol, 32, *Old Market Street.*
March 10, 1847.

QUANTITATIVE ESTIMATION OF THE STRENGTH OF HYDROCYANIC ACID.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

SIR,—I am desirous of drawing the attention of my brethren to the great importance of ensuring uniformity in the preparation of medicinal hydrocyanic acid, and of the very easy and expeditious method of testing its strength by means of a solution of nitrate of silver, as directed by the London College, feeling certain that, used in the manner and with the precautions I now suggest, it is susceptible of great accuracy, and by means of which the per centage of such acid in any sample, may be determined in five minutes with as great precision, as the strength of an alkali may be determined by a careful alkalimetrical analysis.

It has been my habit for some time to test the strength of every sample of hydrocyanic acid I have either bought or made, and in so doing I have been struck with the great discrepancies in the strength of what ought and might very easily be made a uniform preparation. Some which I purchased lately, and have just examined, contained only 1.1 per cent. of anhydrous acid, and other samples I have found to contain more than four per cent. It is sufficiently unfortunate that in addition to the variations arising from want of care or knowledge, the authorised expounders of pharmacy in other kingdoms should have thought fit to fix on different standards of strength for so important a preparation; but not satisfied with their differences, we make matters worse by the very common, and, I think, unjustifiable use of what is called Scheele's strength, which is no definite strength at all, although I believe it is always a strong acid. What I have examined has been generally about double the strength of that of the London Pharmacopœia, but varying extremely as purchased at different times and places.

The article labelled Scheele's Acid, is frequently the only one kept and used on all occasions where the acid is required, so that prescriptions may be sent to one place and dispensed with an acid containing four or more per cent., and to another with only one per cent.

I am afraid the impossibility under common circumstances of obtaining the whole of the acid given by calculation is frequently overlooked by the manufacturers; at least I can only account for the deficiency in strength of many samples from this circumstance; the formula of the London College having been used, and the product made up to the full quantity there directed, without reference to its strength.

To show the difficulty of obtaining the theoretical product of anhydrous acid, I have repeatedly made the medicinal acid, using a Liebig's condenser, between three and four feet long, and one and a half inch diameter, cooled with nearly ice-cold water, and the extremity dipping beneath the recipient water contained in a bottle surrounded with ice, and yet I have not succeeded in obtaining more than three-fourths of the calculated strength.

With respect to the following plan of analysis, I have frequently contrasted it with the more precise method, by ascertaining the weight of the precipitated cyanide, and although in the hands of the skilful manipulator, and when the greatest possible exactness is required, that process is undoubtedly to be preferred, yet, in ordinary hands, and for ordinary purposes, this is quite sufficiently accurate.

I take a stoppered bottle, that will hold 2,800 grains of distilled water at 62°, up to about the middle of the neck, which quantity I weigh into it, and mark the level of the water with a file. I then pour out a portion of this water, and weigh into the bottle 177.8 grains of pure fused nitrate of silver; when dissolved, water is poured in up to the mark in the neck. This forms the first solution, every 100 grain measures of which contains 6.35 grains of nitrate, and will be equivalent to 50 grains of acid Hyd. P. L. or one grain of anhydrous acid. I measure 50 grains of the acid to be examined in a measure graduated to grains of water; I turn it into a ℥j widemouth square bottle, wash the measure with about 100 grains of water, which is added to the acid. I then measure 100 grains of the test solution and pour it carefully into the acid. As I find neutralization approach, I drop it in very gradually; during the process it is necessary to stir briskly with a glass rod, which causes the precipitate quickly and perfectly to subside. This is especially necessary towards the close of the operation, when the addition of a drop of the solution merely causes a haziness which prevents the reaction being seen; but by briskly stirring it becomes perfectly clear. By this means neutralization can be effected with the greatest nicety. Every 100 grains of the test solution exhausted will denote 1 grain, every 10 grains 1-10th of a grain, and every 1 grain 1-100th of a grain of real acid in 50 grains of that under examination; then by doubling the quantity in these 50 grains we of course get the per centage. I keep a bottle in which to preserve the precipitated cyanide until it accumulates sufficiently, when I gain more hydrocyanic acid from it, or reduce it.

I have been thus minute in the details of this simple process, because I have many times failed in getting a satisfactory result until I did it as above.

I am, Sir, yours obediently,

F. KENDALL.

Stratford-on-Avon, March 10, 1847.

TEST FOR STRYCHNIA.

Instead of the brown peroxide of lead, Otto employs a small quantity of a solution of chromate of potash, which added to a solution of strychnia in concentrated sulphuric acid, produces immediately a magnificent violet colour, and much more distinctly and more beautifully than the brown pulverulent hyperoxide of lead.—*Pharmaceutisches Central Blatt.*, Dec. 30, 1846.

CHLORIDE OF SODA AS A TEST FOR THE PRESENCE OF GUAIACUM RESIN IN RESIN OF JALAP.

BY M. SMEDT.

It has long been known that chlorine possesses the property of rendering resin of guaiacum blue. According to the author, the chlorides of soda and of lime also possess this property, and may be used for detecting the smallest traces of guaiacum resin when mixed with resin of jalap. In fact, two grains of a mixture of fifteen parts of resin of jalap, and one part of guaiacum resin, dissolved in f ℥j. of spirit, specific gravity 825, gives on the addition of a single drop of solution of hypochlorite of soda (chloride of soda), a green streak, which is deposited as a precipitate to the bottom of the glass, leaving the supernatant liquor of its original colour.

The sensibility of this reaction is such, that the presence of one part of guiaiacum resin in 320 parts of resin of jalap may be indicated.

M. F. Boudet has found that this test may be applied with equal advantage for detecting the presence of guaiacum resin in scammony.—*Journal de Pharmacie d'Anvers*, and *Journal de Chemie Médicale.*

ON THE ANALYSIS OF GUNPOWDER.

BY R. F. MARCHAND.

Determination of the contained water.—The water contained in the charcoal of gunpowder, is easily and perfectly removed in the vacuum over sulphuric acid. It is done still more simply if the powder be placed in a crucible, and suspended in a well-closed bottle, whose bottom and sides are moistened with concentrated sulphuric acid. In one such experiment, the powder lost 1.13 per cent., in another 1.10 per cent., of water. Such a drying-bottle, therefore, perfectly supplies the place of an air-pump.

Determination of the nitre.—The author first heated the powder in a platina crucible for some time, with sulphuric acid, to 392° Fahr., by which the nitrate of potash was decomposed, and the sulphur expelled. The residue was then heated to redness, until sulphate of potash alone remained. This method, however, is objectionable, on the ground that the heated residue often explodes even some time after all the nitre appeared to have been decomposed. When the gunpowder was mixed with eight or ten times its weight of sal-ammoniac, considerable and unavoidable loss was experienced. The following methods are much preferable :—

1. *Extraction of the nitre by solution and evaporation.*—The powder (five or six grammes) without being pulverised, is mixed with hot water, and frequently stirred. In half an hour, the solution is filtered through a dry and weighed filter, of five inches diameter, and the residue again treated with hot water, and the solution filtered as before, and evaporated in a water-bath. The residue is then fused in a porcelain capsule, and weighed. The residue of sulphur and charcoal collected on the filter, may be placed in the drying-bottle, and weighed after a few days. At the end of twenty-four hours, the weighing is to be repeated, and the mass may be considered as dry, if its weight be not altered. By such an experiment, Berner's sporting

gunpowder yielded a residue of 79.06 per cent. of nitre, and 21.03 per cent. of charcoal and sulphur.

2. *Determination of the quantity of nitrogen in the nitrate of potash*,—This method is preferable to the foregoing, both on account of its quickness and accuracy. The finely triturated and weighed powder is mixed with from twenty to thirty times its weight of fine oxide of copper, and placed in a combustion tube of 700 millimetres in length, so that the latter was filled to the length of 120 millimetres, with carbonate of lead, then with unmixed oxide of copper, after that with the above mixture, which was followed by some oxide, and at last to about the length of 300 millimetres, with metallic copper reduced by hydrogen. The combustion lasts about three-quarters of an hour. The powder thus burnt, yielded I. 79.3 per cent.; II. 79.2 per cent. of nitre. All the nitrogen of the gunpowder, however, cannot be referred to the nitre, as the charcoal contains about one-half per cent. of it.

The proportion of nitre in gunpowder, may also be determined by chloride of platium; but this is a more troublesome and less correct process than that by evaporation. To determine the nitre by the specific weight of the solution, is not possible, as the gravity of the solution does not increase with the quantity of the salt.

3. *Determination of the sulphur*.—The quantity of sulphur contained in gunpowder, can be determined either directly, or by calculating the loss. The latter method is, however, not very convenient, since the determination of the charcoal offers great difficulties. Most frequently the sulphur is determined as sulphate of baryta, and that very easily, by heating to redness in a glass tube, an intimate mixture of nitrate of baryta, with three parts of carbonate of baryta, and twelve times the quantity of gunpowder. The mixture does not melt, and can be easily removed out of the tube, which is in addition washed out with diluted muriatic acid. The muriatic solution of the mass is heated for several hours in a water-bath, nearly to the boiling point, then immediately filtered. In one experiment, the gunpowder contained 9.82 per cent. of sulphur, but this quantity is somewhat too large, in consequence of the sandy matters mixed with the baryta.

The method of Gay Lussac is similar to this, but cannot be performed without some loss. He mixes the gunpowder with an equal quantity of nitre and carbonate of soda, and four times the quantity of common salt, and heats it to whiteness in a platina crucible. By this a trifling loss is experienced from the escape of sulphur.

By the moist way, the sulphur can be oxidized, according to Millon, by a mixture of nitric acid and chlorate of potash. To two or three grammes of gunpowder contained in a retort, concentrated nitric acid is added, and then one or two decigrammes of chlorate of potash. The mass is kept boiling slowly, and as soon as the smell of chlorous acid has disappeared, or even sooner, an equal quantity of the chlorate is to be added as before. Both charcoal and sulphur become oxidised, and after some time, a perfectly colourless liquid is obtained. This is then mixed with a large quantity of water, and chloride of barium added to the hot mixture. If the precipitate be left standing for some time, in a temperature of about 212° Fahr., the liquid can be filtered without difficulty. The precipitate should be well washed. If the reaction be undertaken in a retort, and the distilled fluid collected in a receiver, small quantities of sulphuric acid are detected in it. It is, therefore, the safest plan to undertake the distillation in a tubulated retort, to bring the neck of the same under the water, and after the reaction is over, to mix the contents of the retort with those of the receiver, and to add the water with which the vessel was washed. This method offers very accurate results, but it is somewhat troublesome, particularly in consequence of the escaping vapours.

4. *Separation of the sulphur from the charcoal*.—In order to determine

the quantity of charcoal contained in gunpowder Wöhler's method may be applied. The best way is, to place an unweighed quantity (about one gramme) of the mixture of sulphur and charcoal in a tube, to drive the sulphur in a stream of hydrogen into copper, to weigh the tube, freed of the hydrogen by a current of dry air, after having taken its weight when filled with copper, to remove the charcoal and to weigh again. By this method, generally, some loss takes place, since the charcoal yields, during the expulsion of the sulphur, also pyroligneous acid, carbonic acid, and carbonic oxide. Pure charcoal of Rhamnus frangula, heated to redness in a current of hydrogen, lost 11.5 per cent., and another experiment 14.7 per cent. To prevent this loss by the employment of a lower degree of heat is not advisable, as the sulphur would not then be entirely expelled. It is, therefore, better to heat the charcoal strongly, and to add to the residual quantity of charcoal one-tenth as the medium of its loss.

For separating sulphur from the charcoal, sulphite of soda, sulphuret of potassium, and sulphuret of ammonium, as well as sulphuret of carbon, have been employed. In using the three first, it is not impossible that part of their bases may be obstinately retained by the charcoal, by which the weight of the latter will be augmented. The well-washed charcoal is dried, weighed, and part of it burnt, which should leave behind only about six or eight per cent. ashes, whilst another part, on being heated in a tube, should yield no sublimed sulphur. The sulphuret of carbon is easily employed, and admits of an exact determination of the charcoal, particularly if the powder, after being exhausted by water, is treated with absolute alcohol, and then, with sulphuret of carbon which has been purified by oxide of lead.

With sulphite of soda and sulphuret of potassium, the extraction of the sulphur from the gunpowder, succeeded only imperfectly; sulphuret of ammonium, and sulphite of ammonia, succeeded better. The quantity of ashes contained in charcoal cannot be determined, since the soluble constituents have been removed by the water, but it is possible to discover by burning the charcoal, whether the powder still contains earthy admixtures. If the charcoal be burnt after the extraction of the nitre, and after the sublimation of the sulphur, the quantity of the foreign admixtures can be calculated from the quantity of the residue, the ashes of the charcoal being calculated at one per cent.

The results of the analyses made after the above mentioned methods, were in the average, 79.16 per cent. nitre, 9.72 per cent. brimstone, and 10.99 per cent. charcoal, or, the ashes being taken in consideration, and one per cent. ashes added to the charcoal, 10.65 per cent. charcoal, and 0.47 per cent. impurities.

These results, however, cannot serve as data for the ingredients required in the manufacture of gunpowder. During the mixing and further preparation, part of the ingredients is wasted, particularly of the charcoal, and this can only be determined in each manufactory by separate experiments. It is further necessary to determine of what quality the separate ingredients are. The purity of the nitre is tested in the solution, by evaporating the latter to dryness, redissolving the residue, filtering the solution, acidulating with nitric acid, and testing by nitrate of silver, and nitrate of baryta, for chlorine and sulphuric acid. If chlorine be discovered, and if besides, chlorates are suspected, a second solution is to be evaporated to dryness, then ignited till nothing more is evolved. It is then dissolved in water acidulated with nitric acid, by which nitrous acid is evolved, and the solution is then treated with nitrate of silver. If the quantity of the chloride of silver is greater than that in the first experiment, the powder contained a chlorate. In order to discover the precence of fulminating quicksilver, the powder should be mixed, according to Dr. Ure, with diluted muriatic acid, sulphuretted hydrogen added to the solution, and the precipitate tested for quicksilver. The sulphur may possibly contain impurities, consisting of earthy parts, or of sulphuret of arsenic. The latter may be extracted by caustic ammonia, and precipitated by some acid. Sulphuret of antimony may easily be discovered, by boiling with aqua regia, and testing in the usual way. As regards the charcoal, it is principally necessary to know, what degree of carbonization it has undergone. For this purpose, the powder merely washed with water, is subjected to an elementary analysis, in which the sulphurous acid is retained by peroxide of lead.—*Pharmaceutisches Central Blatt*, Dec. 23, 1846.

ANALYSIS OF GUN-COTTON.

Pettenkofer has examined this substance, and found its composition to be $C_{12} H_7 NO_{25}$. The following table shows the comparative composition of cotton, xyloïdine, and gun-cotton.

	COTTON. $C_{12} H_{10} O_{10}$	XYLOIDIN. $C_{12} H_9 NO_{14}$	GUN-COTTON. $C_{12} H_7 NO_{25}$	
			Found.	Calculated.
Carbon	44.5	36.76	26.26	26.08
Hydrogen ...	6.1	4.79	2.75	2.52
Nitrogen ...	—	5.65	4.52	5.10
Oxygen	49.4	52.80	66.47	66.30
	100.0	100.00	100.00	100.00

According to this analysis, gun-cotton does not contain sufficient oxygen to effect the complete combustion of all the carbon and hydrogen, and the fact that red-hot oxide of copper is reduced by the vapours which escape during the explosion, and which have till now been considered as nitrous acid, proves, that these vapours still contain imperfectly consumed carbon and hydrogen.—*Pharmaceutisches Central Blatt*, Dec. 30, 1846.

ON FERMENTOLEUM CONII.

BY X. LANDERER, OF ATHENS.

For some years past, *Conium maculatum* has become so scarce in the neighbourhood of Athens, that it has been imported from Libady and Thebes, where it grows more abundantly. For the purpose of preparing *extractum conii*, a hundred weight of *Conium maculatum* was ordered from the latter place. It arrived in a very bad condition, in consequence of the distance and bad packing. Being unfit for the purpose for which it had been required, it was left in a tub for several days, to become more decomposed, and was then distilled with water. On the surface of the distilled watery liquid, there were a few drops of oil, the smell of which, as well as that of the liquid, was narcotic, the taste acrid and burning, the colour white, inclining after a few weeks, to yellow. This *fermentoleum conii* dissolved with facility in alcohol, in ether, and in volatile and fixed oils. Eight drops of it given to a small dog, and three drops to a pigeon, produced no injurious effect on the animals.

ATOMIC WEIGHTS AND EQUIVALENTS OF SIMPLE BODIES.

The examinations of simple bodies with respect to the atomic weight made during last year, are not very numerous. The most important are those by Maumené, of chlorine, silver, and potassium, which showed for the two first bodies higher numbers, and for the last a lower, than those hitherto adopted. Strecker calculated, that the atomic weight of silver is between 1349.16 and 1348.42, and that it is most likely = 1348.79. At the same time he showed that the weight of carbon is not 75, as is generally supposed, but somewhat greater. Marignac has found that the atomic weight of chlorine is not 450, as Gerhardt maintains. Peligot has repeatedly examined uranium, and confirmed its atomic weight, 750. The view, that the atomic weights can be reduced to multiples of the hydrogen, becomes more and more general, and Maumené has tried to substantiate this particularly with those of chlorine and potassium.

NAMES OF BODIES.	SYMBOLS.	ATOMIC WEIGHT.		EQUIVALENTS.	
		O = 100.	H = 1.	O = 100.	H = 1 .
Aluminum	At.	171.167	13,716	171.167	27.432
Antimony	An. or Sb.	1612.904	129.243	806.452	129.243
Arsenic *a*	Ar. or As.	940.084	75.329	470.042	75.329
Barium	Ba.	856.880	68.663	856.880	137.325
(*Pelouze*) *b*	—	858.010	68.640	858.010	137.280
Bismuth (old equiv.) *c*	Bi.	1330.377	106.600	1330.377	213.200
———	—	886.918	71.069	886.918	142.139
Boron *d*	Bo. or B.	136.204	10.914	136.204	21.828
Bromine	B. or Br.	978.306	78.392	489.153	78.392
(*Marignac*) *e*	———	999.300	80,000	499.650	80.000
Cadmium	Cad. or Cd.	696.767	55.833	696.767	111.665
Calcium (*Berzelius*)	Cal. or Ca.	251.488	20.119	251.488	40.238
(*Dumas, Erdmann, Marchand*)	———	250.000	20.000	250.000	40.000
Carbon (*Berzelius*)	Car. or C.	76.438	6.125	76.438	12.250
(*Marchand, Erdmann*)	———	75.000	6.000	75.000	12.000
Cerium (*Berzelius*) *f*	Ce.	574.796	46.051	574.796	92.102
Chlorine *g*	C. or Cl.	443.280	35.463	221.640	35.463
Cobalt	Co.	368.991	29.568	368.991	59.135
Columbium or Tantalium	Col. or Ta.	1153.715	92.448	1153.715	184.896
Copper	Cu.	396.663	31.728	396.633	63.456
Chromium *h*	Chr. or Cr.	328.300	26.271	328.300	52.542
Didym	D.	——	——	——	——
Erbium	E.	——	——	——	——
Fluorine	F.	235.485	18.834	117.718	18.834
Glucinum or Beryllium *i*	G. or Be.	87.100	6.968	87.100	13.936
Gold	Au.	2458.330	196.665	2458.330	393.330
Hydrogen	H.	12.500	1.000	6.250	1.000
(*Berzelius*)	—	12.478	1.000	6.239	1.000
Iodine	I.	1565.570	126.845	782.785	126.845
Iridium	Ir.	1233.499	98.841	1233.499	197.682
Iron *k*	Fe.	350.000	28.000	350.000	56.000
(*Svanberg, Norlin, Berzelius*)	—	350.527	28.042	350.527	56.084
Lanthanium *l*	Lan. or La.	451.879	37.150	451.879	74.300
Lead	Pl. or Pb.	1294.645	103.571	1894.645	207.142

NAMES OF BODIES.	SYBO LS.	ATOMIC WEIGHT.		EQUIVALENTS.	
		H = 100.	O = 1.	O = 100.	H = 1.
Lithium	Li. or L.	80.375	6.440	80.375	12.881
Magnesium	Mg. or Mag.	158.140	12.651	158.140	25.302
Manganese	Mn. or Man.	345.887	27.716	345.887	55.432
Mercury	Hg.	1265.822	101.430	1265.822	202.863
(*Erdmann, Marchand*) *m*	—	1250.000	100.000	1250.000	200.000
Molybdenum	Mol. or Mo.	598.520	47.960	598.520	95.920
Nickel	Nic. or Ni.	369.675	29.622	369.675	59.245
Niobium	Nb.	——	——	——	——
Nitrogen or Azote *n*	N.	175.000	14.000	87.500	14.000
Osmium	Os.	1244.487	99.722	1244.487	199.444
Oxygen	O.	100.000	8.000	100.000	16.000
Palladium	Pal. or Pd.	665.899	53.359	665.899	106.718
Phosphorus	P.	392.286	31.436	196.143	31.436
(*Pelouze*) *o*	—	400.300	32.024	200.150	32.024
Platinum	Pla. or Pt.	1233.499	93.841	1233.499	187.682
Potassium or Kalium *p*	Po. or K.	488.940	39.115	488.940	78.230
Rhodium	Rh. or R.	651.387	52.196	651.387	104.392
Ruthenium	Ru.	——	——	——	——
Selenium	Se.	494.582	39.631	494.582	79.263
Silicium (*Berzelius*)	Si.	277.312	22.221	277.312	44.442
(*Einbrodt, Herm.*) *q*	—	184.874	14.790	184.874	29.580
Silver *r*	Ag.	1350.000	108.000	1350.000	216.100
Sodium or Natrium	S . or Na.	290.897	23.310	290.897	46.620
(*Pelouze*) *s*	—	287.170	22.973	287.170	45.946
Strontium	Str. or Sr.	547.285	43.853	547.285	87.709
(*Pelouze*) *t*	—	548.020	43.841	548.020	87.682
Sulphur (*Erdmann, Marchand*) *u*	S.	200.000	16.000	200.000	32.000
(*Berzelius*)	—	200.750	16.060	200.750	32.120
Tellurium	Tel. or T.	801.760	64.250	801.760	128.506
Terbium	Tb.	——	——	——	——
Thorium	Th.	744.910	59.646	744.910	119.292
Tin	Sta. or Sn.	735.296	58.920	735.296	117.840
Titanium	Ti.	303.662	24.332	303.662	48.664
Tungsten or Wolframium	Tu. or W.	1183.000	94.795	1183.000	189.590
Vanadium	Va. or V.	855.846	68.578	855.846	137.157
Uranium *v*	Urnm. or U.	750.000	60.000	750.000	120.000
Yttrium	Yt. or Y.	402.514	32.254	402.514	64.308
Zinc (*Ai. Erdmann*) *w*	Zn.	406.600	32.528	406.600	65.056
Zirconium	Zir. or Zr.	420.201	37.670	420.201	75.340

NOTES.

a According to *Berzelius* 938.88. According to *Pelouze* (*Central Blatt*, 1845, p. 893) 937.50.

b *Central Blatt* 1845, p 893.

c Oxide of bismuth=Bi_2O_3. *Erdmann* and *Marchand* double the number, *ergo*, 2660.754.

d *Hermann* assumes boracic acid to be = BO_3, and calculates according to this the atomic weight of *Boron* at 90.654 (*Central Blatt*, 1845, p. 905).

e *Central Blatt*, 1844, p. 797.

f According to *Beringer*, 577.000—46.464. According to *Hermann* 575—46.

[g] According to *Gerhardt* 450—36. According *Maumené* 443.669—35.493.

[h] *Peligot* found 325—335.

[i] According to *Awdejew* 58.084 (Glucina = G O).

[k] According to *Stromeyer* and *Wackenroder* (*Central Blatt*, 1844, p. 47) = 349.533.

[l] According to *Choubine*, *Rammelsberg* found 454.88. *Hermann* (*Central Blatt*, 1843, p. 858) assumes 600. *Mosander* (*Central Blatt*, 1843, p. 770) 580.

[m] *Central Blatt*, 1844, p. 356. Experiment 1250.9. *Millon* (*Central Blatt*, 1845, p. 939) found 1249.63

[n] *Pelouze* (*Central Blatt*, p, 892) found 175.18.

[o] *Central Blatt*, 1845, p. 893.

[p] According to *Pelouze* (*Central Blatt*, 1845, p. 892) 489.30. *Maumené* 487.004.

[q] *Central Blatt*, 1845, p. 705 and 906. *Pelouze* (*ibid* 1845, p. 893) fixes the M G of Si at 88.94.

[r] According to *Maumenè* 1350.322.

[s] *Central Blatt*, 1845. p. 892.

[t] *Ibid*, 1845. p. 893.

[u] *Ibid*. 1844, p. 357. Experiment 200.07.

[v] *Ibid* 1846, p. 539. According to *Rammelsberg* (*ibid* 1843, p. 577, and *Ibid*, 1845. p. 844) 741.407. According to *Ebelmen* 742.875. According to *Wertheim* (*Ibid*, 1843, p. 586) 746.35.

[w] *Jaquelain* found 414. *Favre* (*Central Blatt*, p. 475) 412.5.

Pharmaceutisches Central Blatt, Jan. 6th, 1847.

PATENT FOR IMPROVEMENTS IN THE MANUFACTURE OF SODA AND POTASH.

BY F. S. M. DE SUSSEX.

This patent is for the manufacture of soda or potash from the muriates of these alkalies, by a circular process, in which the substances employed to effect decompositions, are recovered in other stages of the process, and again applied for similar purposes.

Chloride of sodium or of potassium, is in the first place decomposed by means of nitric acid, at a temperature of 212°, nitrate of soda, or of potash, and hydrochloric acid, being thus obtained. The nitrate of soda or of potash, is then mixed with about an equal weight of lime or other alkaline earth, and the mixture heated to redness, when the nitric acid is driven off and collected in suitable apparatus, and the potash or soda is left in combination with the lime. The alkali is separated from the lime by solution in water, and the lime and nitric acid thus recovered, are again used for renewing the operation.

The process appears, from this general outline of it, to be very simple, and ought, unless there be some drawback to its perfect success, to be an economical one. The patentee states that he has found "that the affinities of the alkalies in question for other substances, vary according to the temperature at which those alkalies respectively (or the salts containing them) are brought into contact with such other substances." Thus, at a temperature of 212°, he calculates on effecting a complete decomposition of chloride of sodium by means of nitric acid, and distilling off the hydrochloric acid which is disengaged, free from nitric acid. He describes the apparatus used for this purpose, as consisting of "a pan or vessel of any convenient size or shape, and made of earthenware (or any other material which is not liable to be chemically acted upon by the substances to be placed in it) and having a cover of a similar material fitted air-tight, but with two apertures therein, one for the insertion of a funnel, by means of which acid may be introduced into the pan or vessel, and the other aperture for the insertion therein of a pipe or tube, which is to be connected with any convenient chamber or receiver, in which the gaseous products evolved from the pan or vessel, may be condensed."

The pan or vessel above described, is heated to 212° Fahr., by means of steam or hot water; sixty parts of chloride of sodium are then introduced into it, and to this, commercial nitric acid, equivalent to fifty-four parts of pure nitric acid, is added. The heat is continued for about twelve hours, or until the process is complete. We apprehend, however, that this part of the process will be liable to some uncertainty, and indeed the patentee states, "I have generally found that the process already described, is sufficient for the decomposition of the chloride of sodium, and the production of the nitrate of soda, *but* if it should be found that in consequence of any imperfection in the mode of performing the process *or otherwise*, that the whole of the chloride of sodium has not been decomposed, and that a portion of the nitric acid has been distilled or driven over into the condensing receiver, it will be found to be advantageous to return the liquid produce of the distillation back into the pan or vessel before mentioned, so that the portion of nitric acid which it contains, may be united with the base of the undecomposed chloride of sodium, and the hydrochloric acid must then again be distilled or driven off as before." And this is directed to be repeated again and again, if requisite until the decomposition is complete.

This is evidently one of the weak parts of the process.

The above operation being concluded, liquid nitrate of soda will remain in the pan or vessel in which the decomposition has been effected. This is evaporated to dryness, and then "subjected to the chemical action of one or more of the substances by Chemists called earths, at a red heat, so as to decompose it."

The patentee states that he uses for this purpose either the alkaline earths, or any other description of earths. Oxide of iron and other oxides may also be used, but not so beneficially. Lime answers the purpose best, and therefore is preferred.

Equal parts of the nitrate of soda, and of lime in powder, are mixed together, and introduced into a cylinder or other suitable vessel of iron, fire-clay, or other proper material, the vessel being furnished with a tube communicating with a receiver. The mixture is now heated to redness, and this heat continued until the whole of the nitric acid is distilled over. The residue left in the cylinder will consist of lime and caustic soda, the latter of which may be separated by treating the mixture with water, while the lime and the recovered nitric acid may be used for a repetition of the process.

We apprehend that the objections to this process will arise from the defects we have already alluded to, and from the loss necessarily resulting from decomposition in the recovery of the nitric acid in the method described.

CONVERSION OF SULPHURETTED HYDROGEN INTO SULPHURIC ACID.

BY M. DUMAS.

Having observed, first, that the lagoons of Tuscany disengaged sulphuretted hydrogen, and that the water of these lagoons, although deprived of free sulphuric acid, yet, on passing over a soil containing carbonate of lime, soon produced sulphate of lime; and, secondly, that the waters of Aix, in Savoy, produce similar phenomena, and that the linen which has been put into these waters, undergoes a perceptible change after a few weeks; M. Dumas has concluded that sulphuric acid may be produced from sulphuretted hydrogen under particular circumstances. In investigating the cause of this change, this Chemist has discovered that sulphuretted hydrogen mixed with air by means of a porous body, and especially linen, and under the influence of a slightly elevated temperature, is slowly converted into sulphuric acid.—*Journal de Chimie Medicale.*

ON PIGMENTS.

BY DR. J. A. STOECKHARDT.

(*Continued from page* 229.)

BROWN AND BLACK PIGMENTS.

XXVIII. Earthy Clay Iron-Stone goes by the names of *Umber*, *terra umbra*, *Turkey*, *Cyprian*, or *Sicilian umbra*, and *chestnut-brown.* It is a soft earthy pigment, which colours by mere touching, in the form of thick pieces or balls, of from a yellowish brown to chestnut brown colour. On being gently burnt it assumes a blackish brown colour, and is then called *burnt Dutch umber*, and *black ochre*. These are water, lime, and oil colours. Their price is from 2 to 8 dollars per lb.

As *reddish brown* ground colours, there are used several of the foregoing oxide of iron pigments, principally the burnt *terra di Siena*, of *yellowish brown* ground colour the darker shades of ochre.

XXIX. Carbon Pigments.

A. Earthy brown coal is found in commerce as *Cologne umber*, *Cologne brown*, *Cassel brown*, *Vandyke's Cassel* or *Spanish brown*, *Cologne* or *Cassel earth*. It is found in many coal formations as a fine, earthy, very brittle, deep brown substance, which is mixed with water to the consistency of a dough and formed into square masses. After being heated in the fire it gradually goes out with an empyreumatic odour, leaving whitish yellow ashes behind. It is employed as an oil and water colour, and a finer sort of it also as *brown bistre*.

B. Vegetable charcoal constitutes the colouring matter in *soot*, *lamp-black* or *pine-soot*, *pine*, *Frankfort-vine*, *lamp*, *printers*, *yeast*, *oil*, *sealing-wax*, *Paris* or *lacker black*, *in bister*, *and in Chinese ink*. The number of organic substances from which more or less finely-divided carbon is obtained by imperfect combustion is immense, and those most adapted for this purpose are resinous woods, resin, turpentine, pitch, pit-coal, mineral coal, oil of coal-tar, the branches of the vine, wine-lees, &c. By igniting it in covered vessels the fatty parts may be extracted from soot, so that it will more easily mix with other substances, and yield a deeper black. The brown bister so much valued for painting in water colours, is obtained by washing the glistening soot (*fuligo splendens*); while Chinese ink is procured by kneading the finest sorts of soot with a solution of isinglass, and afterwards putting the dough into moulds.

C. Animal charcoal, in a finely ground state, is called *bone black*, *Frankfort*, *oil*, *mineral*, *ivory*, *shoe-black*, *black* or *burnt ivory*, or *hartshorn*, and is obtained by exposing bones to heat in hermetically closed vessels. It is heavier than the foregoing, and leaves behind on being burnt, a large quantity of solid and white ashes.

D. Mineral coal is contained in *graphite* (*black-lead*, *lead pencil*, *pottlok*, *black-lead ore*, *ground black-lead*, *and powdered black lead*); also in the black and grey modifications of Fuller's earth, which are sold in solid pieces as *black chalk*, *drawing pencil*, *Reisskohl*, &c., or ground as *slate black*, *slate*, *silver*, or *stone grey*.

The sorts and prices are so uncertain and varying that no positive data can in this respect be given.

XXX. Sepia. This is obtained by drying the black fluid contained in the cuttle-fish, and extracting the colouring matter from the dried residue by means of caustic ley; by some acid it is precipitated from the solution, and at last, after having been mixed with gum, moulded into small square tablets. The peculiarly beautiful brown which the sepia possesses is highly esteemed by water-colour painters. Its price is from 3 to 8 dollars per pound.

XXXI. Catechu (*terra japonica*, *Cajou*). The liquid extract from the wood of the catechu tree has been long known in medicine, under the name of Catechu ; but as a pigment it has been established only for a few years. It is sold either in deep red cakes with a glittering fracture (*Bombay catechu*) ; or in chocolate-brown pieces, with a dull earthy fracture (*Bengal catechu*). A third sort (*black catechu*), is prepared artificially by mixing the first sort with chromate of potash.

It is chiefly employed in dyeing and printing for obtaining durable brown in all possible shades ; recently also a lake (*Acajou lake*, *mahogany*, or *brown lake*) has been formed from it, but which has hitherto not been in great demand. The prices are very varying.

To the obsolete black and brown pigments belong *ferrocyanide of copper* (*Hatchett's*, *chemical* or *Breslau brown*) ; *sulphuret of bismuth*, *sulphuret of lead*, *sulphuret of copper*, and *sulphuret of mercury*.

For *printing* and *dyeing*, *black* and *grey* colours are chiefly produced from substances containing tannin (*gall-nuts*, a kind of gall called *Knoppern*, *Sumach*, *bablah*, *dividivi*), with ferruginous and cupreous salts ; and by combining several dark colours, *e. g. fustic*, weld, and quercitron, with madder, logwood, Berlin blue, Indigo, &c. &c. *Brown* colours are obtained from catechu, walnut-peels, oak bark, oxide of iron, oxide of manganese (*Bistre solitair*) ; or by mixing red and yellow with blue or black. *Ivory* is stained black by a solution of silver or logwood, and brown by a solution of quicksilver.

Paper is dyed black with bone black and soot (the latter is sometimes mixed with a decoction of logwood or with Berlin blue), brown with umber, ochre, English red, or with red lead and chrome yellow, Schweinfurt green, with yellow lake and umber, and with other combinations.

Confectioners may use as black pigments, soot, Indian ink, and bone-black ; as brown pigments, umber, terra di Siena, liquorice, sepia, and catechu. *Distillers* employ, burnt sugar and decoction of chicory.

In *porcelain glass* and *enamel painting* brown and black colours are produced from the oxides of manganese, copper, and cobalt, the protoxide of iron, and the oxide of uranium.

WHITE PIGMENTS.

XXXII. CARBONATE OF LEAD with *hydrated oxide of lead*, is known in commerce under the name of *White lead*, *Cremser* or *Cremnitz*, *slate*, *painters*, or *silver-white*, *Blanc legcr* ; that which has been rendered blueish with Berlin blue, is called—*pearl-white* ; that dyed grey with soot, *silver-grey*. It is prepared—

a. By exposing thin sheets of lead to the simultaneous influence of carbonic acid gas and the vapour of vinegar (according to the *Dutch method*), or *b*, in a moist way, by passing carbonic acid into a solution of subacetate of lead (the *French method*), or *c*, by passing hot carbonic acid over a mixture of oxide of lead, and a very small quantity of sugar of lead thickened with water to the consistency of pulp, until the transformation into carbonate of lead has taken place (*English method*).

The white lead occurs mostly in commerce as a heavy easily conglomerating powder, rarely in cakes or tablets ; it mixes very well with varnish, without assuming, like chalk or other earthy pigments, a greyish hue. It forms very uniform coatings and possesses an extraordinary covering capacity. In consequence of these excellent qualities it has obtained, not only as a white varnishing colour, but also as an admixture to almost all the oil colours, an uncommonly great consumption. It is equally well adapted for water-colours. By mixing it with heavy spar and sulphate of lead, seldom with chalk and clay, about twenty different sorts are composed in the manufactories, which sell at from 3 to 25 dollars per cwt.

XXXIII. SUBCARBONATE OF ZINC is at present but *seldom* employed under the names *permanent white*, *pearl*, *silver*, *neutral*, or *zinc white*, in oil painting. It possesses certainly the advantage over white lead, that it is not changed by sulphuretted hydrogen. but its covering capacity is so weak, and its price so high (20 to 40 gr. per lb.), that it will very likely soon belong to the obsolete pigments.

XXXIV. White Earth *and alloy*, or *ground colours*.

A. Carbonate of lime is sold as *Chalk, Vienna, Spanish, Bologna*, or *Briançon white, Blanc de Mendon, Blanc de Troyes, marble-white.* It is one of the most universally known earth colours, which cannot be employed as oil-colour, but serves very well as a water and a lime-colour. Price 1¼ to 4 dollars per cwt.

B. Sulphate of barytes is called in commerce *Heavy spar, mineral*, and *new white, white lead substitute;* and is prepared from the colourless sorts of heavy spar [or *cawk*] by grinding and washing them. It is an excellent pure white, but has only a weak covering capacity, and is, therefore, generally increased by the admixture of white lead. It is a water and lime-colour. Price 1 to 3 dollars per cwt.

C. Sulphate of lime is known as *Gypsum, plaster of Paris, washed alabaster*, and *alabaster white;* it is obtained by grinding the alabaster or solid plaster of Paris in its natural state. The price is 1 to 2 dollars per cwt.

D. Silicate of alumina is obtained by washing and cleaning the white sorts of clay or *kaolin*, as they are found in nature. It forms either a powder, or more frequently white square lumps or tablets, and is sold under the names of *Cornish clay, white boles, white clay*, or *Rouen white.* Price 1 to 3 dollars per cwt.

E. Silicate of magnesia is sold, in a ground state, as *Venetian talc, washed magnesia, talc white, satin white*, or *satin stuff;* in the form of a slippery tender powder, and employed chiefly for preparing rouge, and for giving the silk lustre to paper hangings. Price 5 to 9 dollars per cwt.

Bone ashes (*white burnt hartshorn*) are scarcely now employed.

All the above-mentioned earthy pigments are employed as white covering colours, chiefly in painting rooms. But still more frequently they are used, the same as the pure aluminous earth, starch and sulphate of lead (which latter is produced in considerable quantities in the cotton manufactories as an almost valueless product) for obtaining lighter hues from the darker pigments.

As an obsolete pigment may be mentioned the basic nitrate of bismuth, which was formerly known by the name *Spanish* or *pearl white*, or *white face paint.*

The recently recommended *antimony white* is not yet an *article of commerce.*

White glazed paper is prepared with white lead.

The white pigments for *confectioners* are chalk, plaster of Paris, clay, talc, starch, and hartshorn burnt to white cinder.

A milk-white appearance in *glass* is produced by oxide of zinc or bone-earth.

(*To be continued*).

NEW GREEN INK.

BY M. WINCKLER.

Dissolve 180 grains of bichromate of potash in f℥j of water; add to the solution, while warm, f℥ss of spirit of wine, then decompose the mixture with strong sulphuric acid until it assumes a brown colour. Evaporate the liquor to one-half, let it cool, dilute it with f℥ij of distilled water and filter it, then add f℥ss of spirit of wine, add a few drops of strong sulphuric acid, and let it stand. After some time the ink assumes a beautiful green colour, and is rendered fit for use by the addition of a small quantity of gum arabic.—*Journal de Chimie Médicale.*

ON GLYCYRRHIZIN.

BY DR. T. LADE.

In order to obtain glycyrrhizin, Dr. Lade cut liquorice root into small pieces, and digested it with cold water. The deep coloured infusion was filtered and concentrated during the solution. The greenish nitrogenous substance, which now separated by the influence of heat, was removed by a second filtration, and by adding some diluted acid as long as the latter continued to produce a copious precipitate. After standing for a short time, the sediment, which was at first light-coloured and flakey, formed a tough, pitch-like, dark-coloured mass, from which the supernatant liquid was easily poured off. By repeated kneading with acidulated water, and then with pure water, the substance was obtained free of all acids and inorganic bodies. The shining mass having been dried in the water-bath, during which time it had become brittle, was ground, dissolved several times in spirit of wine, and again evaporated at a moderate temperature.

When sulphuric acid is employed for the precipitation, particular care should be taken that all the sulphuric acid be removed before the desiccation in the water-bath, since the acid decomposes the substance at the augmented temperature, and causes a considerable loss of glycyrrhizin.

The glycyrrhizin thus obtained, was free from the precipitant and inorganic bases, for though, on burning it on the platinum foil, some ashes remained, they were of so inconsiderable a quantity, that they could have no influence upon the analysis.

The glycyrrhizin as obtained by evaporation from the alcoholic solution, is a shining, transparent, brown mass, which, on being ground, forms a brownish yellow powder.

Glycyrrhizin dried at 212° Fahr., was repeatedly analysed by Rochleder, by means of bichromate of lead and oxide of copper, and from the results of his experiments, he infers the formula for this substance to be $C_{36} H_{24} O_{14}$, which, assuming the equivalent of carbon to be 75, and that of hydrogen 12.5, gives the following as the per centage composition :—

Carbon	61.3
Hydrogen	6.8
Oxygen	31.8
Glycyrrhizin	99.9

By dissolving glycyrrhizin in common or concentrated nitric acid, a yellowish white substance is obtained, which is caseous, but which, after being washed on the filter, and dried in the water-bath, forms a yellowish white loose powder.

The product thus obtained, is washed out with water, and dissolved in concentrated nitric acid. The solution is to be boiled for some time in a retort, and after having become cold, poured into distilled water, whilst being stirred up. The precipitate thus obtained, represents again, after being washed and dried, the already mentioned light yellow powder.

This substance is a *product of the oxidation of glycyrrhizin*. Its formula is $C_{36} H_{23} O_{17}$. It is formed by the substitution of one O for H, and the further addition of O_2.—*Ann. der Chemie*, lix.

DETECTION OF COCOA-NUT OIL IN SOAP.

The presence of this oil in soap can easily be detected, by adding a few drops of sulphuric acid to a hot solution of the soap. The peculiar odour of the oil may be instantly recognized.—*Pharmaceutisches Central Blatt*, No. 54, for 1846.

ON THE FORMATION OF CAOUTCHOUC IN THE DRYING OILS, BY BURNING.

BY L. E. JONAS.

By the phrase *burning* of linseed, and other drying oils, is understood the process of heating them to a certain point, when they, under the access of the oxygen contained in the atmosphere, spontaneously inflame, and continue to burn. During the combustion, the oil froths up, and is ultimately converted into either tar or coal. If, during the frothing up, the flame be extinguished, by excluding it from the contact of the atmosphere, products are obtained, which possess peculiar characters. Jonas subjected linseed oil, nut oil, poppy oil, and castor oil, to this process, and obtained from the three first a thick, more or less brown, turpentine-like residue. If this be boiled with water, acidulated with nitric acid, a substance is formed, which gradually becomes more consistent, and can be taken out from the liquid like a plaster mass, without sticking to the fingers. During the boiling, the peculiar smell of acrolein was developed, which, however, was no longer perceptible, when the washed plaster mass was heated by itself. This residue assumes great elasticity by boiling, and possesses so great a similarity to caoutchouc, that Jonas gave it the name *oil-caoutchouc*. It is more or less brown, adheres very firmly by its cut surfaces, and is, in its consistency, quite similar to the substance which is obtained after boiling common caoutchouc for several days. When boiled in water, it becomes softer, swells up in pure ether (*i.e.* ether free from spirit of wine), and subsequently dissolves in it, but can be precipitated by spirit of wine from its solution. Its solution in sulphuret of carbon, is similar to an emulsion, like that of *speckgummis*. The oil-caoutchouc swells up and dissolves in oil of turpentine, if this be free from resin. The solutions being evaporated, it reassumes its former qualities. In petroleum it swells, but does not dissolve. If it be boiled with caustic potash ley, it contracts, without dissolving, but if the ley be diluted, it dissolves gradually with a brown colour, and is precipitated unaltered from the solution, by the addition of muriatic acid. In alcoholic potash ley, it dissolves easily, and is precipitated by acids.

If, in order to prepare balsam of sulphur, one part of sulphur be dissolved in two parts of linseed oil without properly diminishing the temperature towards the end of the operation, the whole mass is often changed into a gelatinous substance, not unlike the oil-caoutchouc, which does not perfectly dissolve either in the fixed or the volatile oils. If this substance be boiled in water, containing some nitric acid, the sulphur is entirely but gradually converted into sulphuric acid, and the thickened oil remains behind in its original form ; its colour, however, has now become brick-red, and it is compressible, without showing the qualities of the elastic caoutchouc. Sacc also mentions, that linseed oil when boiling, is suddenly converted into a gelatinous caoutchouc-like mass, which, being treated with nitric acid, becomes red and tough, without yielding the least trace of elaidin. Castor oil when heated above its boiling point, becomes brownish, and developes irritating, inflammable vapours. If during the combustion, a crust be observed to form itself at the brim of the vessel, the flame must be extinguished. Castor oil yields but little froth, otherwise the yellowish white mass, which forms the residue, becomes brown, and is carbonized. The spongy residue, which is not soluble in ether and volatile oils, is sometimes elastic and always tasteless. It is dissolved and formed into soap, by boiling potash ley. The soap yields, on being mixed with muriatic acid, a fatty acid, of an acrid, burning taste.—*Pharmaceutisches Central Blatt*, 23rd Sept., 1846.

ON THE EXTRACTION OF STRYCHNIA.

BY M. J. F. MOLYN.

The extraction of the vegetable alkaloïds often presents considerable difficulty, because these active principles are found combined with acids, or mixed with other principles which accompany them in the different parts of the plant, and from which it is often very difficult to separate them. Nux vomica, which is used for the extraction of strychnia, in preference to St. Ignatius's beans, its commercial value being less, consists of a very hard horny substance, not easily penetrated by liquids; it contains a large quantity of gummy matter, which when the seeds are treated with water, dissolves together with the igasurate of strychnia. On adding lime to this solution, to decompose the salt of strychnia, the mucilage is precipitated with the alkaloid, forming a very abundant deposit, which requires a large quantity of alcohol to deprive it of the strychnia which it contains. If to avoid this gummy matter, the seeds be directly treated with alcohol, the process becomes very expensive, in consequence of the large quantity of alcohol that must be employed to dissolve the whole of the strychnia.

The objections which apply to the above means, have induced me to try the effect of fermentation, which does not at all affect the active principle present. The gummy and saccharine matters of the seeds are decomposed, carbonic acid is disengaged, while the lactic acid which is produced, decomposing the igasurate of strychnia and brucia, forms with these alkaloids a very soluble lactate.

Availing myself of those improvements which have been suggested by authors who have directed their attention to the extraction of strychnia, and adding such modifications as my experience proved to be useful, I have fixed on the following process, which in addition to its being economical affords a good result.

Mix nine pounds of nux vomica in coarse powder with water, so as to form a thin paste. Keep this at a temperature of from 68° to 78° Fahr. for several days, when fermentation will manifest itself by the disengagement of a large quantity of carbonic acid. The mixture is to be daily stirred, so that the whole of the powder may be exposed to the fermentative process. I think that when the washed seeds are previously boiled for two or three hours, so as more completely to dissolve the gummy matter, the process is abridged. The fermentation is completed in eighteen or twenty days, and is indicated by the cessation of the disengagement of gas. The mixture is then passed through a hair sieve and pressed. The residue is boiled two or three times, according to the quantity of water employed. The liquids are left to become clear by deposition, and are then evaporated to about three gallons. Add nine ounces of quick-lime in powder, well stirring the precipitate; let it stand for six or eight hours, then separate the precipitate, and submit it to strong pressure. Heat the liquid to the boiling point, and add a slight excess of sulphuric acid; sulphate of lime is formed, which is allowed to subside, and the supernatant liquor is evaporated to about four pints; to this, one ounce of powdered quick lime is added, and the process above described, repeated. The precipitate resulting from this process, is pressed and added to the former; they are then dried and reduced to fine powder; this powder is digested in about ten pints of proof spirit, with a gentle heat. The spirit dissolves the brucia, the colouring matter, and a little of the strychnia, which may be recovered by evaporating the liquid, and allowing it to crystallize. The precipitate thus freed from brucia and colouring matter, and reduced to powder, is digested at twice, in ten pints of spirit of wine, sp. gr. 823. The solutions, which will be nearly colourless, are filtered, and four-fifths of the spirit recovered by distillation. On allowing the remaining solution to cool and stand for a day, the strychnia will be found at the bottom of the vessel, in the form of a white crystalline powder in a yellowish supernatant liquor. The liquor is to be decanted off, and the strychnia washed with proof spirit, which removes any remaining portion of brucia, and renders it chemically pure by one crystallization.—*Journal de Pharmacie d'Anvers.*

ON BEBEERIN.

BY DR. F. L. WINCKLER.

Bebeerin resembles very much paracin, but differs from the latter in the circumstance of its hydrate being gelatinous. The platinum combination of bebeerin yielded in four combustions an average of fourteen per cent. of platinum. Contrary to Dr. Maclagan's statement, Dr. Winckler found, in the bebeera bark, starch, but no kinic acid.—*Pharmaceutisches Central Blatt.*

THE QUALIFICATION OF CHEMISTS IN THIS COUNTRY.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

Sir,—Allow me, through the medium of your journal, to reply to the somewhat unjust remark of your correspondent R. B. Swinfew. Of that gentleman I know nothing. He may have been actuated by the best of motives in making such comments; nevertheless, I cannot but think he has made assertions totally uncalled for, unfounded, untrue. Let him be assured there are thousands beside himself who read the pages of your journal, not only as a source of pleasure, but as one also of profitable instruction; and with this let him bear in mind he is not the only one who will rejoice to see you succeed "in the efforts you are making to raise the character and qualifications of Chemists and Druggists on a proper basis." Your correspondent intimates, your chief difficulty in the work of education lies with the Country Druggist. Assuredly, if grocers, oilmen, booksellers, &c., who sell salts and senna, with a blue bottle in their windows, be the class of persons whose character and qualifications you have to raise, yours is a task not easy of accomplishment, and equalled only by the task the Apothecaries' Company would find in attempting to legalize the thousand unqualified practitioners with which our country teems.

But "the great majority" of Chemists are not so ignorant as your correspondent pleases to fancy. You have respectable, sensible, and, in many cases, well-educated men, not only to teach but to unite and keep united in one great brotherhood, with one great object in view.

I am, Sir, yours respectfully,
George Harris.

St. Albans, 3d March, 1847.

[We think our Correspondent has misinterpreted the observations to which he alludes. We do not consider them to be a reflection on the respectable members of our body, but applicable chiefly to persons who are not regular Chemists at all, but whose misdeeds are occasionally attributed to Chemists in general, for want of that separation which we are endeavouring to effect by Act of Parliament.—Ed.]

REVIEW.

GRAY'S SUPPLEMENT TO THE PHARMACOPŒIA, *being a concise but comprehensive* DISPENSATORY *and* MANUAL OF FACTS AND FORMULÆ, *for the Chemist and Druggist and Medical Practitioner.* ENTIRELY RE-WRITTEN, RE-ARRANGED, and CONSIDERABLY ENLARGED by THEOPHILUS REDWOOD, Professor of Pharmacy to the PHARMACEUTICAL SOCIETY of Great Britain. London: Longman and Co., Simpkin and Co., Sherwood and Co., John Churchill, Henry Bohn, and Henry Renshaw. 8vo, pp. 1118.

THE work, of which the volume before us is ostensibly a new edition, having been for many years in the hands of the profession, we presume that our readers are acquainted with its general purport and design. Its present form, arrangement, and dimensions, however, are so entirely altered, that, with the exception of the title it still bears, it is an entirely new work.

Mr. Redwood in his preface states that he found it necessary to make these alterations "in order to reconcile the work with the present state of our knowledge, and to adapt it to the altered circumstances of the class of readers for whom it is principally designed."

Having quoted an extract from Mr. Gray's original preface, published in 1818, in which the general objects of the work are described, Mr. Redwood gives the following statement respecting the arrangement which he has adopted:—

"The long preface appended to former editions is in this replaced by a brief chronological history of Pharmacopœias and Dispensatories.

"The articles on weights and measures, specific gravities, thermometrical scales, &c., have been much amplified, and several tables for facilitating calculations, some of which have been prepared expressly for the work, have been added.

"The table of the solubility of salts which is now introduced, the glossary of terms used in prescriptions, and the pharmaceutical calendar, have been rendered as complete as the means at my command have enabled me to make them. * * *

"In the part which treats of 'Animals yielding products employed in medicine, domestic economy, and the arts,' about three hundred animals are described, which are arranged according to Cuvier's classification. * *

"Among the 'vegetables yielding products employed in medicine, domestic economy, and the arts,' are included nearly three thousand plants. These are arranged after De Candolle's classification, and reference is given for all the genera to the '*Prodromus*' (&c. &c., also to various other authorities, which are enumerated.)

"The last part of the work comprehends the formulæ for the preparation of compounds employed in medicine, domestic economy, and the arts, together with mineral substances, and some animal and vegetable products. Besides all the formulæ of the three British Pharmacopœias, a selection is here given from the foreign Pharmacopœias of various parts of the world, with the view of comprising those authorized processes most likely to prove useful to the prescriber or dispenser of medicines in this country. To these formulæ, the authorization of which is indicated by explicit reference to the sources from whence they are derived, are added a great number of others for the preparation of substances either sold or used by the class of persons for whom the book is intended. Many of these are now published for the first time, and relate to compounds for which there have hitherto been no good published formulæ. Finally, much pains have been taken in endeavouring to make the index complete and correct."

For obvious reasons we confine our notice to a simple statement of the plan and extent of the work, which is given chiefly in the words of the author. Any opinion as to its merits, in a journal with which the author is connected, would have but little weight, and is therefore omitted.

MEDICINES, THEIR USES AND MODE OF ADMINISTRATION, *including a Conspectus of the three British Pharmacopœias, an Account of all the New Remedies, and an Appendix of Formulæ.* By J. MOORE NELIGAN, M.D., Edin., M.R.S.A. Second Edition. Dublin, J. Fannin and Co.; London, Longman and Co.; Edinburgh, Maclachlan and Co. 8vo. pp. 485.

THE MICROSCOPIC ANATOMY OF THE HUMAN BODY. By A. H. HASSALL. Part VIII.

TO CORRESPONDENTS.

C. P. K. Y.—When "Acid Hydrocy." "Acid Hydrocy. Med." or "dil." is ordered in a prescription, the acid of the Pharmacopœia should invariably be used. This contains two per cent of real acid. Scheele's acid, although less uniform in strength, is generally assumed to contain five per cent. of real acid. It is easy to reduce it to the Pharmacopœia strength. See Mr. Kendall's letter, page 477.

A. L.—Carmine. See vol. v., page 516.

"JUVENIS," M. P. S.—No. 4 is the best.

J. N., M. P. S.—(1.) It may be made as directed in the Pharmacopœia, but concentrated to the strength required.—(2.) Chalk.—(3.) He has none. —(4.) In a press.—(5.) Melt and strain.—(6.) Scrape it out.—(7.) Stomachic.

J. W.—(1.) The prominent symptoms of poisoning by lead are colic, turgidity and darkening of the gums. A narrow livid blue line at the edge of the gums is a very usual characteristic.—(2.) The best tests for lead in water are sulphuretted hydrogen, which causes a black precipitate; sulphuric acid or a sulphate, a white precipitate insoluble in acid; chromate of potash, a yellow precipitate.—(3.) See pages 460 and 493.

F. (Maidstone) suggests that rolls of plaister ought to be sent out in brown jars instead of in paper, which is troublesome to remove.—[By placing the roll in cold water for a few minutes, the paper may be easily removed.]

E. M.—Chloride of lime is sometimes used for cleansing casks, linen, &c.

W. H. C. T.—We are unable to give the information desired respecting the philosophy of spontaneous combustion in the living body.

C. J. SOCIUS.—(1.) In this country, the terms *equivalent* and *atomic weight* are generally used synonymously, to indicate the combining proportion of a body; but on the continent the equivalent is in some cases considered to consist of more than one atom, as in the case of hydrogen, which is represented in water as H_2O, instead of HO.—(2.) Potassio-tartrate of soda is generally described as a double salt, of which it has all the characters. It is better to follow facts than theories.

"Inquirers."—There are two methods adopted for bleaching palm oil on the large scale: one consists in the use of chromic acid; the other, in exposing the oil in shallow vessels, heated by steam, to the action of air and water.

F. G. H.—Yes.

"Juvenis" (Canterbury.)—See Hunt's *Photography.*—We are unable to state the probable expense of the apparatus.

I. B. B.—Sugar tends to preserve many metallic solutions from decomposition.

"A Subscriber" (Haverfordwest).—Yeast or barm may be thus obtained: Take of honey ℥v, cream of tartar ℥j, malt ℥xvj, water, at 122° Fahr., Oiij; stir well together, and allow the whole to rest for two or three hours, or until the temperature sinks to 65°, at which it must be kept covered over, until fermentation takes place, and yeast is formed.

J. W.—For the preparation of sesquichloride of iron, see vol. iv., p. 24.

"Newbury."—We have found the best method of fixing metal taps in stoneware jars to be by means of corks.

Mr. Joseph Leay, of Birmingham, writes as follows:—

"Sir,—In allusion to your remarks at page 396, in your number for March, I cannot help protesting against that unmeaning and *evidently* useless label, '*The Drops.*' You state 'that drops are always taken in small quantities.' Now I can readily prove that the word is frequently used to imply, *not the dose*, but the mode of preparation, and I need merely refer to the Irishman, who applies the term to whisky, because it distils in drops."

[Notwithstanding the above opinion of our correspondent and the Irishman, we repeat that we never heard of the contents of a vial of drops being swallowed entire, except by mistake, or by gross carelessness.]

"A Subscriber" wishes to be informed of some work treating principally of fermentation as applied to brewing.

W. B. (Newmarket).—The question is fully answered, vol. i., page 178.

"Alpha."—We believe the next edition of Dr. Pereira's *Materia Medica* will soon be published.

"A Member" wishes to caution the trade respecting a person who he informs us is in the habit of ordering medicines, perfumery, &c. in considerable variety—he takes part with him, and promises to pay when the rest are sent, gives a false address, and decamps.

Test Paper.—We think it right to give a caution respecting another person who is going about London and calling on Chemists under the pretext of selling a very delicate kind of test paper. He borrows a few shillings, promising to bring the amount in test paper; sometimes calls again with an apology, for which he expects a few shillings more. This being granted, he repeats the process at another shop, forgetting the promises and the debts.

The communications have been received from Mr. Keating, Mr. Jones, R. C., and J. C. G., a Member (Leeds).

Advertisements to Mr. Churchill, Princes Street, Soho.

Instructions from Members and Associates, respecting the transmission of the Journal, to Mr. Smith, 17, Bloomsbury Square, before the 20th of the month.

Other Communications to the Editor, 338, Oxford Street, (before the 20th of the month, if answers be desired in the ensuing number).

THE PHARMACEUTICAL JOURNAL.

VOL. VI.—No. XI.—MAY 1st, 1847.

A BILL FOR REGULATING THE QUALIFICATION OF CHEMISTS AND DRUGGISTS.

In our numbers for June, July, and August, last year, we reported briefly the result of the interviews which had taken place between the President and Censors of the College of Physicians and a deputation of the Pharmaceutical Society, on the subject of the proposed Pharmaceutical Bill. The endeavour to modify the Bill in accordance with the suggestions received from the President and Censors, was found to be attended with more difficulty than the deputation at first anticipated; and after a series of deliberations, which occupied a considerable time, the Council came to the conclusion, that it would be impossible to reconcile the known sentiments of their constituents with the proposal to form a joint Board of Examiners, in the manner suggested by the President and Censors. A strong objection was also taken to the establishment of a "College of Pharmacy," and the College of Physicians appeared disposed to support the Pharmaceutical Society in preference to any new body.

The College of Pharmacy had been originally proposed under the impression that such a plan would be less likely to meet with opposition than the adaptation of the Pharmaceutical Society to the purposes of an Act of Parliament; and the constitution of a joint Board of Examiners had been contemplated for a similar reason, and also in the hope that the sanction of the College of Physicians would add weight to the board. But when it was discovered that the first of these measures was likely to give rise to opposition instead of the reverse, and that the co-operation with the College, on the terms on which alone it could be effected, would entirely destroy the independence and thus excite the opposition of the Pharmaceutical body, the Council found it expedient to reconsider the subject in all its bearings, and to prepare a new Bill not open to these objections.

The Bill now in contemplation (see page 513) resembles the former one in its most essential particulars. It provides for the registration of all persons who are at the present time engaged in business as Pharmaceutical Chemists, and for the examination as well as registration of those who shall commence business after a certain date. The clauses respecting the restrictions on unqualified persons, the penalties on those who assume the name of Chemists without possessing the qualification, the exemption of medical practitioners and certain other persons enumerated, from the operation of the Bill, in fact, all the clauses affecting its specific objects, are nearly if not precisely identical with the corresponding clauses in the former Bill. The difference consists in the fact that the machinery of the Pharmaceutical Society is now adapted to the purposes of the Bill, without any union or co-operation with any other body, but under the general sanction and supervision of the Secretary of State, as a security to the public for a due and efficient observance of the laws.

The Bill in its present state is submitted to the Members of the Society, and an opportunity is thus afforded for suggesting any verbal amendments which may be thought desirable. We feel persuaded that the general principles of the measure will be favourably received by the Members at large, and any observations which may be made on the several clauses will meet with due attention from the Council.

It is of the highest importance for our whole body to come forward unanimously in support of a Bill, the object of which is to raise the character and qualification of the Chemists of this country, and to protect the public against the evils arising from the practice of Pharmacy by incompetent persons.

From the Members of the Pharmaceutical Society we anticipate that cordial co-operation and support which has hitherto been manifested in every instance in which such assistance has been required, and in no case has this been more essential than it is at the present time, when the object of the movement is the completion of the undertaking for which the Society was established.

To those Chemists who are already established in business, but who have not joined the Society, the passing of such a Bill will be equally beneficial, as they will have the opportunity of registration, and will thus participate in the improved character and respectability of the body.

The Bill will not have a retrospective character, and therefore it ought not to provoke opposition from any of the parties to whom it relates.

Neither will it interfere in any way with the rights or privileges of Medical Practitioners, in favour of whom a clause is inserted with a view of exempting them entirely from its influence, so far as relates to the performance of all their accustomed functions. The only clause affecting in any degree the Members of the medical profession, is that which prohibits them from assuming the name of Chemist and Druggist, or any other name or title implying that they are registered under this Act. They may continue in the capacity of Apothecaries to keep shops and sell medicines, but a distinction will be created between the two bodies which will be advantageous to both. The public will thus be taught to appreciate the comparative merits of each, instead of confounding all who keep "doctor's shops," under the general appellation of "doctors," which is the chief source of the jealousy and rivalry at present existing.

Although we are told by some persons that it is too late in the session for this Bill to be passed, it is extremely desirable that it should be brought into Parliament without delay, in order to direct public attention to the subject, and afford a prospect of passing it early in the next session. In the mean time, our Members throughout the country will have the opportunity of exerting their influence with their representatives in Parliament in anticipation of the approaching general election.

The two objects which are now engaging the especial attention of the Government are EDUCATION and the HEALTH OF TOWNS. The Pharmaceutical Bill has reference to both these objects, namely, the EDUCATION OF CHEMISTS AND DRUGGISTS, and the HEALTH OF THE PUBLIC. We therefore trust that the Appeal about to be made will induce the Government to entertain the subject, and to undertake the passing of the Bill, which, from its nature and public importance, ought to be included in the series of sanatory measures now before the House.

ON THE USE OF PRIVATE FORMULÆ IN MEDICAL PRACTICE.

IN a former number (vol. vi., page 395) we made a few general observations on this subject, and mentioned some of the abuses and evils connected with the system; but could not at that time apply these remarks to the special case of Dr. Cronin, which was awaiting the decision of a court of law.

It was proved in evidence, that Dr. Cronin wrote a prescription containing two private formulæ known only in his own shop, which prescription, if prepared as intended, would have been perfectly safe and harmless. No chemical knowledge, *unaided by witchcraft,* could have enabled any person to prepare the prescription correctly, unless acquainted with the above private formulæ. Nevertheless, the whole energy of the defendant and his legal adviser was absorbed in the endeavour to prove that the prescription might have been safely and properly prepared by any Chemist, in support of which fallacy, search was made in various books, and formulæ were brought forward as evidence, which were totally different from those alluded to in the prescription, and consequently quite inapplicable to the case.

In the medical journals, much stress is laid on the Giessen diploma, which had no reference to the real question at issue, and was merely calculated to create a prejudice against the defendant.

Having heard the whole of the evidence, it is and has always been our conviction that Dr. Cronin never intended the prescription to be taken anywhere to be prepared except to his own shop, and that the accident arose from a misunderstanding on this point. We therefore fully concur in the verdict of acquittal given by the jury at the trial. At the same time, the event should serve as a warning to those medical men who adopt private formulæ, and entrust their patients with prescriptions intended exclusively for one particular shop. It should also serve as a warning to Chemists, who ought to be aware of the responsibility which they incur in preparing any prescription in which the nature of the formulæ, or the strength of any ingredient, is not clearly defined. The omission of an ingredient in a prescription, cannot be justified. Although the editor of the *Medical Gazette* expresses a contrary opinion, and the Coroner did not allude to this circumstance, we contend, that on principle a prescription should either be prepared correctly, or it should not be prepared at all, and in all cases of doubt application should be made to the prescriber.

In reference to the bitter almond water, we cannot imagine that any blame could with propriety be attached to Mr. Corfield, and although it is to be regretted that in the present instance the strength of the bitter almond water was not indicated on the bottle, it must be remembered that no intimation was given that the article was intended for internal use, and that it is not customary to state the *dose* of *external* applications, or to label as "poison" articles furnished by one Chemist to another.

Under all circumstances, distilled bitter almond water is an improper preparation as an internal remedy. The almonds are generally more or less adulterated with sweet almonds, and vary very much in the product; consequently, no uniformity can be expected in such a preparation, and the only way in which *aqua amygdalæ amaræ* can be prepared of uniform strength is by adding oil of bitter almonds to water in definite proportions, and these should be stated in any prescription in which it is ordered.

A correspondent at Sheffield informs us, that he frequently has prescriptions brought to him to be prepared, containing private formulæ, the patients having been directed to go to some particular shop. He justly complains that this custom places himself and other Chemists in an unfair position, as their inability to prepare such prescriptions is attributed by the patients to ignorance, and he inquires whether we can suggest a remedy? The only remedy we can suggest, is the publication of the names of the parties between whom such compact exists; but in order to effect the desired exposure, it would be necessary to produce evidence that a percentage is given by the Chemist to the Physician.

Another correspondent complains of the practice of recommending particular shops, and giving patients the impression that ordinary prescriptions can only be depended on if prepared at the houses named. The only remedy in this case, is an Act of Parliament obliging all Chemists to pass an examination. So long as any person, however ignorant, is allowed by law to commence business as a Chemist, medical men have no security for the correct performance of their instructions, and cannot be blamed if they recommend Chemists in whom they have confidence; but in so doing, it is invidious to name only one shop, and it is no more than justice to extend the recommendation to any respectable and qualified Chemist.

MEDICINE AND PHARMACY IN MOLDAVIA AND WALLACHIA.

The two principalities of Moldavia and Wallachia lie on the Lower Danube, near the Black Sea, between 40° 38′ and 47° 10′ east longitude, and 44° to 48° north latitude; and are bounded by Siebenbürgen, Hungary, Servia, Bulgaria, and Rugia. The Carpathians render the country somewhat mountainous; the greater part is, however, extremely fruitful, though ill cultivated. The principal productions are corn, fruit, wine, and wood. Horses, sheep, and cattle are numerous; and wax, honey, salt, saltpetre, sulphur, and gold, are produced in considerable quantities. The climate may be generally considered healthy, although the winter is short and severe, and the summer very warm. The inhabitants consist of Wallachians, Turks, Armenians, Jews, Greeks, Hungarians, Gipsies, Poles, and Germans; and the language of the country is a mixture of Latin, Greek, Turkish, and Sclavonic. The government is despotic. In Moldan the chief town and seat of government is Jassy; and in Wallachia, Bucharest. The inhabitants of these beautiful countries are, generally speaking, raw and uncultivated, but little advanced in civilization, lazy and uncleanly, and are chiefly occupied in agricultural pursuits and breeding cattle.

At the head of the Medical institutions in Moldan is a College of Health (*Comité sanitaire*) consisting of a Præses and six additional members. The Præses is always the Proto-Medicus, and the Council is composed of three Medical Men, one Apothecary (Pharmaceutist) and two Bojars (noblemen and magistrates). A secretary is likewise appointed to the Council. In the metropolis, besides the Physician to the circle (Kneisphgricus) there are four other Physicians appointed by government. Each circle or county has its Chief-Physician (Amtsphgricus) and under him several other medical men. Foreign medical men, desiring to practise in the country, must prove their qualification and undergo a colloquium with the members of the *comité sanitaire*. In Jassy there are eight Apothecaries, in the smaller towns generally one or two. Each Apothecary must have passed an examination as such, or keep a qualified provisor. Government appointments are not easily obtained by foreigners, being generally distributed among the favourites of the Bojars. During the plague and cholera epidemics, which so fearfully raged in this country, the Medical Practitioners often realised large fortunes, their fees being high, and not uncommonly paid beforehand. The establishments of the Apothecaries undergo an annual visitation by the Council of Health, or persons appointed by them. An excellent *déjeûner* is provided for the occasion, and due notice of the time of revision being always given beforehand, each Apothecary provides himself from the other Pharmaceutical establishments with any medicines he might need. The *déjeûner* is of course never neglected. Small-pox carries off numbers of the inhabitants; vaccination, although introduced, being opposed by the ignorance and superstition of the people. Syphilis is likewise very common; and in large districts where no Medical Practitioners are settled, it is frequently treated by old women, principally by fumigations with zinnober. In no country have Morrison's pills performed such wonders. A certain Mr. Tollhausen arrived some years ago with a quantity of them, and opened a sale. Wonderful cures were soon reported, and their price rose to six ducats per box. He commenced by merely selling these pills, but he soon undertook the treatment of cases, and from the early dawn of day to nightfall crowds surrounded his door, and numerous equipages were in attendance to convey the Morrison pill doctor to the houses of the noble and rich. Physicians and Apothecaries were at a discount, and much against their will enjoyed a holiday. Remonstrances having at length been made, the *Comité sanitaire* interfered, and this irregular practice was prohibited—only for a short time, however, for the nobility in this, as in other countries, the great patronisers of quacks, soon thronged around the hospodar in favour of Mr. Tollhausen, and he was actually permitted to continue his practice during the succeeding two years, at the expiration of which period, with a considerable fortune, he returned to Germany. Under Russian protection, the Physicians and Apothecaries of Jassy formed with the assistance of the Bojars a learned society, and laid the foundation for a museum. Little progress has however been made, and the funds of the Society had until lately suffered through maladministration.

The medical institutions of Wallachia differ somewhat from those of Moldan, inasmuch as the former may be considered as suited to a more advanced civilization. The Wallachians are really a superior race to the Moldavians. More connected with the Germans they appear to have advanced a step higher up the ladder of culture than these latter. Their superior physical as well as intellectual qualifications are by some ascribed to their probable descent in part from the Roman Colonies at an early period settled among them. They have likewise suffered less under Turkish despotism than their neighbours the Moldavians. To their great hospador, Gregor Ghyka, they owe many of their reforms in the administration of justice and police, diminution of the national debt, encouragement of agriculture and commerce, opening of schools, building of hospitals, &c., &c. In each of the nineteen circles or counties of Wallachia there is a hospital, with regularly qualified Physicians, Surgeons, and Apothecaries, and the poor of the principality are likewise during their illness attended by medical men paid by government. In the metropolis (Bucharest) are several rich and well-appointed hospitals. The *Comité sanitaire* in Bucharest consists of six Greek or Wallachian medical men, having at their head the Proto-Medicus. Although the poor receive every attention at the hospitals, and can besides be attended by Physicians appointed for that purpose by government, a great confidence in quacks and their remedies nevertheless exists here as well as elsewhere. The Council of Health watch over the general state of health in the country, the quarantine regulations, which are here very strict, and nominally visit the Apothecaries twice per annum. They examine foreign practitioners desirous of settling in the country, in which examination is included a clinical proof at the hospitals. The administration of the *Comité sanitaire* is, however, anything but perfect, and arsenic, corrosive sublimate, nux vomica, belladonna, opium, salts of copper, antimonials, &c., may be purchased as freely here as in England. Charlatans, old women, and gipsies are daily consulted—the latter even arrive at high dignities and honours. The use of abortives is common. The Apothecaries form together a corporation or guild, with certain regulations and privileges, and stand under the direction of the Council of

Health. They choose every third year from their number a President, and meet together for the protection of their interests. Pharmacy in these countries may nevertheless be said to form but a transition from its condition in Europe to that in Asia. The Pharmacopœia in use is the Austrian, but others are not prohibited. Besides the regular tax or price for medicines, the Wallachian Apothecaries are permitted to charge an additional 25 per cent. for their drugs. In Moldau, on the contrary, the Apothecaries, instead of being allowed to make any extra charge for medicines, are obliged *gratis* to make up all prescriptions marked *poor* by the Physician. The number of Apothecaries' establishments in Bucharest is limited to twenty, and the population of the town is about 100,000. This proportion would seem very favourable to the Apothecaries, were it not for the circumstance that a large portion of the inhabitants employ no medical aid, but rely upon the numerous quacks above-mentioned for assistance in their illnesses. The price of a Pharmacy averages from 400 to 1200 Austrian ducats. The larger establishments would, however, be valued much higher. Every medical man intending to practice among the higher clases must possess a good knowledge of French, and be able to sport an equipage. French is generally spoken among the higher classes; and without an equipage, a man, in the eyes of the Wallachians, is nobody. As a proof of the intellectual progress of this people may be mentioned that, since the 1st of January, 1845, a well-supported periodical in German has been published in Bucharest; and in the beginning of last year (1846) a Medico-Pharmaceutical Journal, under the direction of Dr. V. Meyer and Dr. Barach, has commenced operations at the same place.

THE LATE STAMP PROSECUTIONS.

At the meeting held on this subject on the 3d of March, a requisition was agreed upon, calling on the Council to take such steps as might seem advisable, and if requisite, to summon a Special Meeting of the Society. The Council having, by correspondence with the Commissioners of Stamps, ascertained that the prosecutions had been withdrawn, and that the Commissioners were sensible of the error they had committed, considered it unnecessary to take any further steps on the subject, or to summon a meeting.

TRANSACTIONS
OF
THE PHARMACEUTICAL SOCIETY.

PHARMACEUTICAL MEETING,
WEDNESDAY, APRIL 14th, 1847.
MR. MORSON, VICE-PRESIDENT, IN THE CHAIR.

THE CHAIRMAN said the first business of the evening would consist in the announcement of the award of prizes to the successful competitors at the examinations which had just taken place in the classes of Chemistry, Materia Medica, and Pharmacy. He called on the Professors to announce the results.

Mr. FOWNES had very great pleasure in stating the result of the examination in CHEMISTRY; it had indicated a high degree of proficiency in the knowledge of Chemistry, on the part of five competitors, who had sent answers to the questions. Guided by the experience of previous years, he had on this occasion prepared questions that were rather difficult to answer, and which involved the exercise of some judgment; he had found that it was useless to give easy questions to the class of pupils who attended his lectures, as they were answered with so much facility that it was almost impossible to distinguish between them in regard to their relative merits. The questions were as follows:—

Required—

1. A sketch of the physical history of vapours, with the general phenomena of vaporization and liquefaction, and the conditions on which they depend.
2. The doctrine of latent heat; its connexion with specific heat.
3. The method of determining the specific gravity of a gas, in detail.
4. The demonstration of the composition of water.
5. The general history of the ammoniacal compounds.
6. A notice of the chemical functions of water.

Prizes and Certificates of merit were awarded to the following competitors:—

LABORATORY PUPILS.

Prize . . . . . Mr. R. D. GRINDLEY, Chester.
Certificate of Merit Mr. JOSEPH INCE, Southampton Street, Covent Garden.

LECTURE PUPILS.

Prize . . . . . Mr. Wilkinson, at Messrs. Savory and Moore's, Bond Street.
Certificates of Merit Mr. Francis Rudall, Southampton
Mr. G. W. Shrubsole, 60, George Street Portman Square.

Mr. Redwood reported the result of the examination in Pharmacy. He stated that the answers, as a whole, were better than had been furnished on any previous occasion since the establishment of the Society. There were nine competitors in his class, and the answers were all so good that he should have felt perfect satisfaction in awarding a prize to any one of the competitors. The answers given by two of the lecture pupils were so nearly equal in point of merit, that he could not, without a fear of doing injustice, decide which ought to have the priority. He proposed, therefore, that two prizes should be given to these instead of one, so that the two pupils might be placed on an equality, and he would provide the second prize himself.

QUESTIONS FOR EXAMINATION IN PHARMACY.

1. *Extractum Taraxaci.*—Give the process of the Pharmacopœia for the preparation of this Extract, with remarks thereon.

2. *Bismuthi Trisnitras.*—Represent its composition in Chemical symbols ; describe the process for its preparation, and the decompositions which occur in making it.

3. *Alcohol.*—What are the Specific Gravities of *Proof Spirit*, *Rectified Spirit*, and *Alcohol*, of the London Pharmacopœia ?—What are the proportions of Rectified Spirit and Water for making Proof Spirit ?—What are the proportions of absolute Alcohol and Water in the "Alcohol" of the Pharmacopœia ?—What is the elementary composition of absolute Alcohol ?

4. *Acidum Aceticum.*—Describe the process of the London Pharmacopœia for the preparation of this acid—state the per centage of real acetic acid which it contains—describe the method of obtaining the strongest acetic acid that can be made, the composition of this acid, and the elementary composition of Anhydrous Acetic Acid.

5. *Ferri Citras.*—Describe the process by which Citrate of of Iron is prepared in scales.

6. *Pulvis Antimonii Compositus.*—What is the composition of this powder when made according to the Pharmacopœia ?—How is it made, and what are the changes which occur during the process in the ingredients used ?

7. *Cataplasma Sinapis.*—The London Pharmacopœia directs this Cataplasm to be made by adding boiling vinegar to a mix-

ture of equal parts of Linseed and Mustard Seed, in powder. What new product results from this mixture, and what influence does the boiling vinegar produce?

8. What would be the effect of adding Liquor Ammoniæ in excess to each of the following Solutions:—Solution of Sulphate of Zinc—of Persulphate of Iron—of Sulphate of Copper—of Bichloride of Mercury? What would be the difference in the results, if Liquor Potassæ were added instead of Liquor Ammoniæ.

9. What are the reactions which take place when Chlorine is passed into Solution of Carbonate of Potash to saturation?

The Prizes and Certificates of Merit were awarded as follows:—

LABORATORY PUPILS.

Prize	Mr. R. D. GRINDLEY, Chester.
Certificates of Merit	Mr. JOSEPH INCE, Southampton Street, Covent Garden.
	Mr. S. L. ASH, Plymouth.
	Mr. J. B. EDWARDS, Liverpool.

LECTURE PUPILS.

Prize	Mr. G.W. SHRUBSOLE, 60, George Street, Portman Square.
Prize	Mr. THOMAS GREENISH, 30, Conduit Street.

The report of Dr. Pereira, who was unable to attend, was read. The questions and awards were as follows:—

QUESTIONS FOR EXAMINATION IN MATERIA MEDICA.

1. Describe the botanical structure and chemical composition of the seeds of *Strychnos Nux Vomica;* and the process of making Strychnia.—Mention the chief characteristics of Strychnia and Brucia.

2. Compare genuine and false Angustura Barks, with respect to the trees yielding them, the countries producing them, and their characteristics, physical and chemical.

3. What officinal substances are respectively obtained from the natural orders *Liliaceæ*, *Melanthaceæ*, *Smilaceæ*, and *Euphorbiæceæ?*—What are the botanical characteristics of the three first of these orders?—How are the cormi of Colchicum distinguished from Tulip bulbs?

4. Describe the botanical structure of the fruit of *Myristica officinalis*, with especial reference to the seed and its aril.

5. Is the volatile Oil of Bitter Almonds a product or an educt?—Describe the method of obtaining it, and give the theory of the process.—What are the tests of the presence of Hydrocyanic Acid in this oil?

6. Enumerate the various officinal articles of the Materia Medica obtained from vertebrated animals, arranging them in their proper classes and orders.

7. How are the resins of Jalap, Scammony, and Guaiacum to be respectively distinguished?

8. Enumerate the various leaves (or leaflets), fruits, and flowers, composing the Alexandrian Senna of the shops, and state how they are respectively distinguished.

9. How is the purity of Elaterium and Disulphate of Quina to be ascertained?—What quantity of Elaterin should one hundred grains of good Elaterium yield?

10. How would you distinguish a decoction of Cinnamon Bark from one of Cassia Lignea; an infusion of Black Mustard Seeds from one of White Mustard Seeds; the Oil of Cinnamon Bark from the Oil of Cinnamon Leaf; and a solution of Meconic Acid from one of Sulphocyanic Acid?

11. Name the substances marked *A*, *B*, *C*, *D*, *E*, *F*, and *G*.

12. Is the powdered Scammony marked *H* pure or adulterated?

LABORATORY PUPILS.

First Prize . . . . . Mr. S. L. Ash, Plymouth.
Second Prize . . . . Mr. G. J. de Nobrega.

LECTURE PUPIL.

Prize . . . . Mr. T. G. Etherington, 52, Marchmont Street.

The Chairman said the prizes would be presented to the several gentlemen whose names had been read, on a future occasion. He could not, however, refrain from expressing the gratification it had afforded him, and which he was sure it would afford the Council, to hear so favourable a report of the result of these examinations. This would tend more than any thing else to induce the Council to persevere in affording the means of education to the rising generation, which some of them appeared to have made so good a use of.

The following papers were then read:—

INHALATION OF OXYGEN FOR RESUSCITATING ETHERIZED PATIENTS.

BY MR. WILLIAM HOOPER.

The interest relative to this valuable adjunct to ether daily increases, and I am happy to say that our physiologists are taking up the subject in a spirited manner. I have no doubt every operating Surgeon and Dentist using the latter will adopt the former, not that I imagine there is danger in etherizing without oxygen being afterwards inhaled, where due discretion is observed: but the adoption of so satisfactory a reagent will give the faculty such confidence in administering it as will tend to its universal use. For the inhalation of this gas I have added the necessary requisites to the inhaler Mr. Robinson originally introduced, and which is on the table: it is so constructed that the oxygen may be either given or not, affixed or detached, as the operator may wish: the brass-work connected to the glass vessel and tube contains a two-wayed stop-cock, and to which is annexed by a union joint a gas bladder with a plain stop-cock. I supplied Mr. Robinson with an inhaler of this description, which answers in every respect. His incessant investigations in reference to the inhalation of the vapour of ether, must ever be allied to its recent history.

As ether deprives the system of oxygen, it is most reasonable to conclude that the subsequent inhalation of this gas is very applicable. To many, the effect of being *fully* etherized is very analogous to that of drowning, that is, in calling to mind the events of childhood, &c., which had not been thought of for many years, and in such cases, oxygen is found to be the best resuscitating agent. I have, however, no hesitation in saying from personal experience and authenticated accounts that have come to my knowledge, that it is not necessary, in order to cause insensibility to pain, that etherization should be carried to its full extent. I look on this fact as of the greatest importance, and which will cause ether to be a greater blessing to mankind than we originally contemplated—the idea of losing the mind having been a great impediment to its use. The five senses appear to be peculiarly independent of each other, as far as the effect of ether is concerned, inasmuch as that of smelling is the *first* we are deprived of, then that of taste, followed by that of feeling, whilst the sight and hearing remain, and the mind of the patient is perfectly quiescent. At this stage the operation should be commenced by the patient's direction. I quite expect the day will arrive when patients will conduct the inhalation themselves, but at present it should not be given against their will. The vapour of ether acts much more efficiently and pleasantly on an empty stomach; and a meal shortly after its use, especially animal food, prevents nauseating and depressing effects. I have much pleasure in giving these remarks, being the result of my taking and administering these newly-discovered agents for the purpose to which they are here assigned.

7, *Pall Mall East, April* 14, 1847.

ON SOLUTION OF IODIDE OF IRON

AS A PHARMACEUTICAL PREPARATION.

BY MR. WALTER HEMINGWAY.

An inquiry into this subject was entered upon in consequence of a statement made at a previous meeting of the Society, to the effect that iodine was contained in the brown powder which forms in exposed solutions of iodide of iron, even when in contact with iron wire. It was presumed that the solution would thereby vary in strength and prove unfit for use, and it became a question of interest to determine to what extent it was affected by the abstraction. In adopting an arrangement for the purpose of ascertaining this, the conditions which commonly obtain in shops were sought, and an effort made to accomplish in a short time an amount of decomposition which ordinarily would require a much longer period—to this end, a bottle two-thirds full of a strong solution of iodide of iron, and containing wire, was placed in a light situation; it was shaken many times every day, and the stopper as often removed and allowed to remain out for a short interval. After three months the fluid had decreased in quantity a little, and a crust appeared on the sides and sediment at the bottom of the bottle, but on the whole the precipitate was much less than had been anticipated. The specific gravity was now taken by means of a thousand grain bottle, and found to be 1.344; another portion of the same solution, which had been closely kept from the air, was 1.341, showing a slight difference in favour of that which had been experimented upon. On consideration it will appear that two permanent consequences follow from exposure—decomposition of iodide attended with precipitation of iodine, and evaporation of water, and that these effects have influence on the strength of the remaining solution in a manner contrary to each other, one tending to diminish, the other to increase it; and, further, that under the circumstances alluded to, the loss resulting from deposition of iodine is rather more than counterbalanced by the gain arising from evaporation of water. The inference seems to be that a solution of iodide of iron, if preserved in contact with iron wire, may, notwithstanding the changes which it undergoes, be retained as a Pharmaceutical preparation.

The experiment commenced in December and terminated in March; and it is to be observed that had it occupied three of the summer months, when light is very abundant, decomposition would have proceeded at a greater comparative rate; but it is thought that it would not be sufficient to interfere materially with the present conclusion.

Portman Street.

ON THE KORARIMA, OR CARDAMOM OF ABESSINIA.

BY CHARLES T. BEKE, ESQ., PH. D., F.S.A., F.R.G.S.
Corresponding Member of the Geographical Society of Paris.

(Communicated to the *Pharmaceutical Society* in a letter to Dr. Pereira.)

My dear Sir,—As the information which you have collected from other sources and communicated to the Pharmaceutical Society* respecting the *Koraríma* (*Amomum angustifolium*) is likely to lead to misconception as regards the place of growth of that spice, I would beg to trouble you with the following additional remarks on the subject:—

It is stated that in Shoa the *Koraríma* is called *Gurágie spice* ("Gura*q*ue" is a clerical or typographical error for "Gura*g*ue," as the name is spelled by the Portuguese writers), and hence it is inferred that it is probably the produce of Gurágie, which country adjoins Shoa to the southwest. But this designation means only that the spice is brought to Shoa *from*, or *by the way of*, Gurágie; and it should no more lead to the conclusion that it is the produce of that country, than the name "Arab," which is given in Abessinia to articles of coarse German cutlery *because they are imported from Arabia*, proves that they are of Arab manufacture. In addition to this, the elevation of Gurágie, which country lies near the easternmost edge of the Abessinian plateau, in about 8° or 9° N. lat., cannot be less than from 8000 to 9000 feet above the ocean, and consequently its temperature does not allow of the growth of this tropical fruit. And that, in reality, it comes from the much lower and hotter countries situate considerably further westward in the interior, is evident from the fact, that, while it is said that in the markets of Shoa "the priest merchants of Gurágie can obtain one piece of salt money [*ámule*], about two-pence halfpenny in English money," for "a number varying from forty to fifty," I obtained at Báso, in Gódjam, one hundred and fifty miles to the west of Shoa, no less than *one hundred* heads for the same money; and I make no doubt that a *native* would have got even more than that number. This difference of upwards of cent. per cent. in the price arises, of course, from the much greater distance of Shoa from the place of growth.

The idea of the possibility of the *Koraríma* being produced in Madagascar and sent as a spice to Abessinia "up the rivers still further south," is incompatible with these facts, and with the further one that it is carried from so far inland as Báso (five hundred miles) to Massówah on the Red Sea, *to be exported from that place to India.*

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* See pages 466—469.

† The notion that the interior of Africa may be reached by ascending the river *Gowín*, or Jubb—Sir William C. Harris's pseudo-Gódjeb, or "Gochob"—is entirely unfounded; that river being identical with the Wábbi-*Giwéyna*, which descends merely from Hárrar and the easternmost edge of the Abessinian table-land.

After this explanation there cannot, I apprehend, exist any doubt that the *Korarima* is neither the produce of Gurágie, nor is it *imported* into Africa; but that it comes from far in the interior of Africa, and, in fact, (as I was informed) from Túmhe, beyond the Blue River. Whether it is actually the produce of that district, or is brought thither from the lower parts of Wallégga, still further to the west, towards the Bahr el Abyad, *White* River, or Nile, has yet to be ascertained.

When Mr. Johnston and myself were together in the Red Sea in 1843, I gave him some of my specimens of *Korarima.* I do not know from what other source that gentleman may have derived his information respecting the place of growth of this spice; but, at all events, he is under some great mistake in saying that it "is chiefly in the deep valley of the Abiah branch of the Bahr al Azzareeke [Bahr el Azrek], those you have received coming from that part of it which separates Guraque [Gurágie] from Gingiro [Djándjaro]." True it is, that Túmhe, which is known in Western Abessinia as "*the country of the Korarima,*" lies to the west of the Dedhésa, the direct southern arm of the Bahr el Azrek, or *Blue* River; but this is full one hundred and fifty miles away to the west of both Gurágie and Djándjaro; and those two countries are not separated from each other by that river or any branch of it, but by the Zebée, now called Gibbe by the Gallas, which joins the Gódjeb, a tributary of the Bahr el Abyad, or *White* River.

As to the fruit being "perforated and strung upon a strong thread for convenience of carriage and the usages of trade," this may possibly be the case among the retail dealers of Gurágie and Shoa; but at Báso it is certainly otherwise, those which I purchased having been counted to me *from a sack* in which they were loose, like coffee. Neither are they *invariably* perforated (although it is true that they are mostly so), for I have now before me some which are quite whole, and, if I mistake not, one of those which I had the pleasure of sending to you was the same. I have no doubt of the correctness of your own surmise, that they are thus perforated "for the purpose of hanging them up to dry," those found to be already sufficiently dry, of course, not requiring to be so treated. And I find indeed that the pierced fruit are of a somewhat lighter colour than those which are sound, as if the former had been gathered before they were perfectly ripe.

In conclusion, allow me to amend an *erratum* in the concluding portion of the first paragraph of my former information, printed in page 468 of the *Pharmaceutical Journal:* instead of "the Gódjeb, a tributary to the latter *now*, to the south," it should be "*more* to the south."

St. Mildred's Court, April 5th, 1847.

PROPOSED BILL FOR REGULATING THE QUALIFICATION OF CHEMISTS AND DRUGGISTS.

A Special General Meeting of the Members of the Pharmaceutical Society was held on Thursday, the 22d of April, to consider the best course to be adopted for obtaining the introduction into Parliament of a bill "for regulating the Qualification of Chemists and Druggists throughout England and Wales."

The chair was taken by Mr. Morson, Vice-President, who briefly explained the object of the meeting. He alluded to the bill which had been submitted to the annual meeting last year, and stated that the Council, after mature consideration, had concluded to abandon that measure, and had prepared another which they thought would be equally efficient, and would meet with more general support. The bill now to be submitted for the approval of the meeting, as well as that which had been relinquished, had for its object the providing of a properly qualified body of Pharmaceutical Chemists, in whom the public may place confidence. It must be evident to all that such a measure was of the highest importance both to the Chemists and Druggists as a body, and to the public at large. The Council had long felt the necessity of having some law passed that should compel those who commenced business as Chemists and Druggists to undergo an examination, and events which had recently occurred had caused a general expression of opinion to this effect on the part of the public.

He called upon the Secretary to read the draft of the bill, which is as follows:—

A BILL

For Regulating the Qualification of Chemists and Druggists throughout England and Wales.

Whereas it is expedient that persons exercising the business or calling of Pharmaceutical Chemists, or Chemists and Druggists, in England and Wales, should possess a competent knowledge of Pharmaceutical and Practical Chemistry; and that they should also be acquainted with the language in which Medical Prescriptions, Orders, or Receipts, are generally written, and with other branches of useful learning:

And whereas certain persons have formed themselves into a Society, called *The Pharmaceutical Society of Great Britain*, instituted for the more especial purpose of advancing Chemistry and Pharmacy, and promoting an uniform system of education of those who should practise the same; which Society was incorporated by Royal Charter, granted the Eighteenth day of February, One thousand eight hundred and forty-three:

And whereas the said Charter provides that no person (except those who were in business as Chemists and Druggists prior to the Eighteenth day of February, One thousand eight hundred and forty-three) shall become a Member of the said Society, without passing an Examination, and thus proving his qualification to act as a Pharmaceutical Chemist:

And whereas it is expedient that all persons, before exercising the said business or calling, should be duly examined as to their skill and knowledge by learned and competent persons; and that a Register should be kept of all persons engaged in the said business, and that such other provisions should be made as are hereinafter contained:

Be it therefore enacted, by the Queen's most excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, that the Council of the said Pharmaceutical Society shall, within one calendar month after the passing of this Act, appoint a fit and proper person as a Registrar under this Act: and that the Council of the said Society shall have the power to remove the said Registrar, or any future Registrar to be appointed under this Act, from the said office, and from time to time to appoint a new Registrar in the room of any Registrar who may die or retire, or be removed from office as aforesaid; and also to appoint from time to time such Clerks or other subordinate Officers as may be requisite for carrying out this Act, and to pay suitable salaries to the said Registrar, Clerks, and Officers.

And be it enacted, that all such persons as shall, at the time of the passing of this Act, be Members of the said Pharmaceutical Society of Great Britain, according to the terms of the said Charter of Incorporation (of whom a list shall be certified by the President of the said Society, by writing under his hand) shall be registered as Pharmaceutical Chemists and Druggists. And that every other person who shall within one year after the passing of this Act, present, or cause to be presented to the said Registrar, a Certificate, signed by two of Her Majesty's Justices of the Peace, stating that such person did at the time of the passing of this Act, exercise the business or calling of a Pharmaceutical Chemist, or Chemist and Druggist, in some part of England or Wales, shall be entitled to be registered without the payment of any fee; and the said Registrar is hereby required to cause the name of every such person to be registered in the Book provided by the said Council for that purpose, as a Pharmaceutical Chemist and Druggist; and the said Council shall publish annually a list containing the names of all the persons so registered as Pharmaceutical Chemists and Druggists.

And be it enacted, that the Board of Examiners appointed in accordance with the Royal Charter of Incorporation of the said Pharmaceutical Society of Great Britain, and according to the bye-laws of the same, shall be held to be, and are hereby recognised as fit and proper persons to conduct the Examinations of Pharmaceutical Chemists: which Board of Examiners shall consist of (two) Professors, of Chemistry Pharmacy or Materia Medica, and (not less than four or more than eight) Members of the Pharmaceutical Society, who shall be annually appointed, and the names of the Examiners for each ensuing year shall be published in the annual list of registered Pharmaceutical Chemists and Druggists.

Provided always, that the bye-laws of the said Pharmaceutical Society shall be confirmed and approved by one of Her Majesty's principal Secretaries of State; and that the Council of the said Society shall be empowered, from time to time, to alter and amend such bye-laws, subject to the confirmation and approval aforesaid; and such Board of Examiners, when so appointed, shall have full power and authority, and are hereby authorized and empowered to examine all persons who shall present themselves for Examination under the provisions of this Act, in the Latin Language and Classical Knowledge, in Botany, in Materia Medica, and in Pharmaceutical and General Chemistry and Toxicology, and to grant or refuse to such persons a Certificate of competent skill and knowledge, and qualification to exercise the business or calling of Pharmaceutical Chemists, or Chemists and Druggists, under this Act.

And be it enacted, that every person who shall have been examined by the said Board of Examiners, and shall have obtained a Certificate of Qualification from them, shall be entitled to be registered as a Pharmaceutical Chemist and Druggist, upon production of such Certificate to the Registrar, and upon payment of the fee of Five Pounds and Five Shillings; and all the persons so registered as Pharmaceutical Chemists and Druggists, shall be eligible for election as Members of the said Pharmaceutical Society: Provided always, that after (two ?) years from passing of this Act none but examined Chemists and Druggists shall be admissible as Members of the said Society.

And be it enacted, that from and after the end of one year from the passing of this Act, no person shall be entitled to be registered as a Pharmaceutical Chemist and Druggist under this Act, unless and until he shall have obtained such Certificate from the said Examiners of his qualification as aforesaid: Provided always, That it shall be lawful for the Council of the said Pharmaceutical Society, at any time within six years from the passing of this Act, by any bye-law to be made as hereinbefore provided, to suspend, dispense with, or modify, the provisions hereinbefore contained, respecting the Examination of persons under this Act, in favour of any person or persons who, at the time of passing this Act, shall be serving, or shall have served, their Apprenticeship to any Chemist, or Chemist and Druggist, in such manner and to such extent as the said Council may think just.

And be it enacted, that from and after the end of one year from the passing of this Act, it shall not be lawful for any person, not being duly registered according to the provisions of this Act, to exercise the business or calling of a Pharmaceutical Chemist, or Chemist and Druggist, in any part of England or Wales, or to use the name or title of Pharmaceutical Chemist and Druggist, or Chemist and Druggist, or any other name, title, sign, token, or emblem, implying that he is registered under this Act; and if any person not being duly registered under this Act as aforesaid, shall, after the end of one year from the passing of this Act, take or use the name or title of Pharmaceutical Chemist and Druggist, or Chemist and Druggist, or shall use, display, or exhibit any name, title, sign, token, or emblem, implying that he is a person registered under this Act, every such person shall forfeit and pay for every such offence a sum not exceeding nor less than Pounds.

And be it enacted, that it shall be lawful for any two of Her Majesty's Justices of the Peace, in Petty Sessions assembled, acting for the County in which the offence shall have been committed, or for one of the Justices appointed by virtue of an Act passed in the second and third years of the reign of Her Majesty Queen VICTORIA, intituled "An Act for regulating the Police Courts of the Metropolis," to hear and determine in a summary manner any complaint charging any person with any offence under this Act, on the oath of one or more credible Witness or Witnesses, or by his own confession, and to award the penalty hereinbefore provided for any such offence.

Provided always, and be it enacted, that if upon, or immediately after, the conviction of any offender under this Act, any such penalty or forfeiture as hereinbefore provided, be not paid, then it shall be lawful for the said Justices, and they are hereby required to commit any such offender to the common gaol, or house of correction, for any term not exceeding two calendar months, unless in every such case such penalty or forfeiture shall be sooner paid.

And be it enacted, that all and every sum and sums of money which shall arise from any conviction and recovery of penalties for offences incurred under this Act, shall be applied and disposed of in the following manner (that is to say), one half-part thereof shall be paid to the person or persons upon whose information the conviction shall have ensued, and the other half-part thereof shall be paid to the Treasurer of the Pharmaceutical Society, to be applied to the Benevolent Fund of the said Pharmaceutical Society.

And be it enacted, that if any Registrar under this Act shall wilfully make or cause to be made any falsification in any matters relating to any Register or Certificate aforesaid, every such offender shall be deemed guilty of a misdemeanor; and shall, on conviction thereof, be sentenced to pay a fine not exceeding nor less than Pounds, or to be imprisoned for any term not exceeding Six Calendar Months.

And be it enacted, that if any person shall wilfully procure or attempt to procure, by any false or fraudulent means, a Certificate, purporting to be a Certificate of Registration as a Pharmaceutical Chemist, or a diploma of the Pharmaceutical Society, or who shall unlawfully retain or exhibit any such Certificate or Diploma, every such person so offending shall be adjudged guilty of a misdemeanor; and it shall be lawful for the Court, before whom such offender shall be tried and convicted, to sentence such offender to pay a fine not exceeding nor less than Pounds, or to be imprisoned, for any period of time not exceeding Three Calendar Months.

Provided always, and be it enacted, that nothing in this Act contained shall extend or be construed to extend, to lessen, abridge, or defeat, or in anywise to interfere with any of the rights, authorities, privileges, and immunities heretofore vested in and exercised or enjoyed by either of the Universities of Oxford or Cambridge, the Royal Colleges of Physicians, or of Surgeons of England, Scotland or Ireland, or the Society of Apothecaries of London, or of any person or persons who may now be, or hereafter may become entitled to practise as an Apothecary or Apothecaries, under an Act of Parliament passed in the 55th Year of the Reign of His Majesty King George the Third, intituled, "An Act for better regulating the Practice of Apothecaries throughout England and Wales," or any other legally qualified Medical Practitioners; but that the said Universities and Royal Colleges, and the said Society of Apothecaries, and all such person or persons shall have, use, exercise, and enjoy all such rights, authorities, privileges, and immunities in as full, ample, and beneficial a manner, to all intents and purposes, as they might have done before the passing of this Act, and in case the same had never been passed.

Provided further, and be it enacted, that the several persons who, by virtue of the clause last aforesaid are expressly exempted from the operation of this Act, shall not in the conduct of their several professions or occupations, assume the name or title of a Pharmaceutical Chemist, or Chemist and Druggist, or any name, title, or designation, implying that they are persons registered under this Act; and if any person shall act contrary to this present provision, such person shall forfeit and pay for every such offence a sum not exceeding nor less than Pounds.

Provided always, and be it enacted, that nothing in this Act contained shall extend, or be construed to extend to, or affect, or in any wise interfere with the trade, business, or occupation of manufacturing Chemists, or the (wholesale?) Venders of Drugs in a single or uncompounded form (or the Venders of Drugs and Chemicals used for other than medicinal purposes?) or the Makers, Compounders, or Venders of any stamped, patent, or proprietory medicines, or of any horse or cattle medicines; but that all such persons respectively shall be entitled to carry on any such trade, occupation or business in the same manner, to all intents and purposes as they respectively might have done before the passing of this Act, and in case the same had never been passed, subject to the condition that in so manufacturing, vending, or compounding, they shall not assume the name or title of a Pharmaceutical Chemist, or Chemist and Druggist, or use, display, or exhibit any name, sign, token, or emblem, implying that they are persons registered under this Act.

Mr. BELL, in rising to move the first resolution, entered into an explanation of the difference between the Bill of last year and the Bill which had just been read. The former, he said, had been framed on the most liberal principles, but many Members of the Society had objected to the establishment of a new College, which they considered unnecessary, as well as calculated to injure the PHARMACEUTICAL SOCIETY. The College of Physicians, who had been consulted, had also objected to some parts of the Bill, and several attempts had been made to modify it so as to meet these objections; but it was found that in so doing the principles of the Bill were entirely altered, and the independence of the Pharmaceutical body sacrificed. The Council had therefore carefully revised the whole subject, and had prepared another Bill which they considered more likely to meet the wishes of their Members, and at the same time calculated to effect all that was desired by such a Bill, namely, the introduction by law of an improved system of Pharmaceutical education, which would, at the same time, raise the character of the Chemists as a body, and protect the public from the danger arising from want of education in those who prepare and sell medicines. It must not be supposed that the Council had been inactive in reference to this subject. Applications had been made to the present and also to the preceding Government, but the answers had always been that there was some important business in hand—either the corn laws, the famine in Ireland, or something of that kind, which interfered; yet it was always admitted at the same time that the subject was a very important one, and likely to claim the future attention of the Government. He considered that the Chemists should no longer remain quiet with reference to this measure, and that as the Government had several bills in hand relating to the public health, the present was a suitable time for introducing to public notice the necessity for such a Bill as that which had just been read. He moved—

"That measures be forthwith adopted for promoting the introduction into Parliament of a Bill for regulating the qualification of Chemists and Druggists throughout England and Wales; and that the general principles of the Bill, now read, are considered by this meeting to be satisfactory."

Mr. HALLOWS seconded the motion. He congratulated his brethren on the steps they were about taking. There could not have been a more favourable time for such a meeting, for measures were being daily undertaken for promoting education among all classes of the community, including even the poorest classes; and were they, the Chemists and Druggists, to stand still, and rest satisfied with an imperfect and inadequate education, while other bodies were advancing with the times? he trusted that such a charge should not be brought against them. But not only were measures for promoting education occupying the public attention—the present time was alike distinguished for the efforts that were being made on behalf of sanitary regulations, and he would ask, had the Chemists and Druggists no part to act in promoting the public health? Undoubtedly they had, and their first duty consisted in ensuring a faithful and efficient discharge of their office as purveyors of medicines to the public. It was essential for the public health that all those who undertook this duty should be submitted to an examination as a test of their qualification for such an office. The motion was put, and carried unanimously.

Mr. BARKLEY moved the next resolution. In doing so he observed, that although he fully agreed in the justice of the remark which had been made by the learned judge at a recent trial, that "*it was monstrous that those engaged in dispensing medicines for the public should* *not be required to undergo any education to qualify them for such an office,"* yet he felt deeply mortified in reflecting that such a charge could be made against the body to which he belonged. Whilst admitting the justice of that remark, however, it must be borne in mind that the Council of the Pharmaceutical Society had for several years been doing all they could to promote the education of the Chemists and Druggists, and had also made frequent application to the Government for legislative sanction to the measures they had adopted. If, therefore, the Chemists and Druggists were not obliged to undergo any education, and were in many instances very inadequately qualified for their duties, the fault was not theirs, the responsibility rested with the Government; and while this was the case it was very hard that they should have to endure the taunts that were cast upon them as a body. He moved—

> "That petitions in favour of such a measure be immediately prepared for presentation to Parliament, to be signed by Chemists and Druggists residing in London and its vicinity; and that a circular be sent to the local secretaries throughout England and Wales, urging them to adopt a similar course in their several localities."

Mr. Bartlett seconded the motion, observing that he could not conceive that any Members of the trade would object to sign a petition with such an object.

The motion was carried unanimously.

Mr. Squire moved—

> "That the members of the medical profession, as well as the public, be respectfully requested to sanction the efforts of the Chemists by signing petitions to Parliament, representing the necessity of education in those who dispense medicines."

He had no doubt that this proposition would be cheerfully acceded to by the Medical Profession as well as by the public, and he trusted that a great number of petitions would be the result. It was the interest of all parties to promote the contemplated measure, and he would especially urge upon Chemists in a small way of business, that by having some publicly recognised test of qualification, they would be able more successfully to compete with the large establishments which the public flocked to because they had acquired the public confidence.

Mr. Tosswill, in seconding the resolution, said he thought the Council had acted very wisely in endeavouring to enlist the sympathies of the public in reference to the proposed measure. The time at which the subject was brought forward, too, he thought, was very opportune, for although it was probable that the Bill might not be carried this session, yet the discussion of it on the eve of a general election, would be productive of much advantage.

The Resolution was carried unanimously.

It was moved by Mr. Barkley, seconded by Mr. Wheaton, and resolved unanimously—

> "That this Meeting pledges itself to employ every possible means to carry out the Resolutions now passed."

Thanks were voted to the Chairman.

LIST OF MEMBERS, ASSOCIATES AND APPRENTICES (*continued*).

MEMBERS.

Elected in April.

Aberdare	Evans, Thomas, High Street
Banwell	Bridges, James Jennings
Boston	Allen, Thompson, High Street
Bristol	Giles, Richard William, Clifton
Bromwich	Burch, William, High Street
Bury St. Edmunds	*Kirkham, Thos., 29, Butter Market
Cambridge	Foster, James, 16, St. Andrew Street
Durham	Clark, William, Market Place
Edinburgh	Newton, Christopher, 52, North Bdge
Hampstead	Smith, John, High Street
Leeds	Gill, William, 46, Kirkgate
London	Arnold, George R., 2, Brook Street, St. George's East
	Brewer, Eli, 43, Duke Street, Manchester Square
	Eardley, John, 14, Charles Street, Bayswater
	Fincham, Zachariah C., 57, Baker St.
Madeira	Nobrega Gerardo Joze de, Funchal
Manchester	Heaton, Joseph Scholes, Rochdale Rd.
	Mitchell, John, 147, Chester Road
	Roberton, John, 111, Oxford Street
Newbury	Leigh, James Samuel, Market Place
Oldham	Holt, John, Manchester Street
Portsea	Olding, George Hill, Landport
Reading	Perry, Henry Wm., 147, Castle St.
Salisbury	Roe, Septimus, Silver Street
Stockwell	Nosworthy, Wm. Robert, Park Street
Twickenham	Dutton, William Q., London Road
Worcester	Acton, George, 10, Corn Market
	Hazell, Robert Wm , 51, Sidbury

REGISTERED APPRENTICES.

APPRENTICES.	RESIDING WITH	TOWN.
Ballard, W. Waddell	Mr. Gordelier	Sittingbourne
Bell, John William	Mr. Gibson	Newcastle
Bunn, Edward Thos.	Messrs. Hemingway	28, Portman St.
Cooper, William	Mr. Grimmer	Norwich
Chard, Frederick Jas.	Mr. Doughty	Knightsbridge
Desborough, John	Mr. Corrie	Bedford
Masters, Heywood	Mr. Woolley	Manchester
Matthews, William	Mr. Collins	120, Crawford St.
Palmer, Fred. Wm.	Mr. Sturton	Peterborough
Peirson, Thomas	Mr. Cooper	Bridlington
Pigou, Francis	Mr. Yarde	28, Lamb's Conduit Street

ORIGINAL AND EXTRACTED ARTICLES.

ON THE COMMERCIAL AND MEDICINAL PROPERTIES OF THE HYMENÆA COURBARIL, OR LOCUST TREE, &c.

BY W. HAMILTON, M.B.

DALE, in his Pharmacologia (Sect. vi. p. 338, 3d Edit., Lond. 1737), notices, under the name of *Animifera Arbor*, the tree which yields the *gum anime* of commerce, and quotes the Abbé Plumier's account of it as follows:—

> "Courbaril est plantægenus flore papilionaceo; è cujus calyce surgit pistillum, quad deinde abit infructum, seu siliquam duram unicapsularem seminibusque fœtam, duram, subrotundam."—*Plum. Nov. Gen.* 49.

This is the HYMENÆA COURBARIL a lofty and spreading tree, common in the forests of most, if not all the Antilles, and valuable both for its timber, and the odoriferous resin which exudes from wounds made in its bark, and also from its roots, as is the case with the *rhus metopium*, several of the trees which yield caoutchouc, and probably many other plants in which this property of radical extravasation remains to be detected.

Long expresses an opinion, that the Hymenæa, or Locust-tree, is not an indigenous production of the islands, but was *probably* introduced from the Southern Continent, and was first planted in Liguanea, whence it was transferred by means of seeds to other parts of Jamaica, and in confirmation of this opinion adds, "I have been informed that it was generally brought into this island by the little colony removed from Surinam; who planted a great variety of seeds, and, among others, of this tree particularly, at the spot allotted to them, called *Surinam quarters*, in the parish of St. Elizabeth, where the species is now growing in vast abundance."

This statement of Long's is no doubt correct, and the Locust-tree may have been introduced from the coasts of terra firma by individuals unacquainted with the fact of its being a spontaneous production of the whole chain of the Antilles, from the mouths of the Oronoko nearly to the shores of Florida. I have already shown in my notice of the *Cæsalpinia cariaria*, that a similar circumstance took place in Jamaica with respect to that valuable production. And what farther countenances the supposition that the Locust-tree is common, both in the islands and the continent, whose floras are nearly identical, is the fact of its being enumerated by Anwood in his *History of Dominica*, published in London in 1791, among the other products of the primitive forests of that interesting island, without the slightest intimation of its being other than indigenous—His words are—

> "The woods of Dominica, which constitute nearly two-thirds of the island at present, including the parts that are incapable of cultivation on

account of steep and rugged mountains, afford a vast fund of excellent timber, consisting of locus (locust) wood, bullet-tree, mastic, cinnamon, rosewood, yellow sanders, bastard mahogany, iron-wood, several species of cedar, and various other sorts of wood, useful for building houses, vessels, and canoes, for furniture, for dying, and other necessary purposes."—Page 21.

Be this, however, as it may, the tree, whether indigenous or exotic, flourishes in such abundance and such vigour in most of the islands as to merit the attention of commercial enterprise. In Dominica, where it attains a vast size, I have seen doors made from its timber, which would bear comparison, in point of beauty, with the finest specimens of Haytian mahogany; and, as it might be purchased, no doubt, on much easier terms, speculators could hardly fail to find their advantage in importing a few of the choicest logs for trial in the British market. It is not adapted for exposure to the weather, and hence its use in the islands is confined chiefly to the formation of cogs for sugar mills, for which it is well suited by its extreme hardness and durability; but for shafts, which are partially exposed to the vicissitudes of the weather, it is not equally adapted. In Dominica it is chiefly known under the name of *bois courbaril;* its grain is close and free from knots; and its specific gravity is such, that a cubic foot is said to weigh 100*lbs.* It is susceptible of a high polish, and I have seen many beautiful articles of furniture manufactured from it. Jacquin, who speaks of the tree as inhabiting the forests of Martinique, corroborates this account, by saying—

> "Materies est durissima, nadorum fere expers, coloris badii, politurae idonea, ponderosissima, ut pes cubicus circiter centum libras pendat. Hinc ad varium usum adhibetur, ad supellectilem, imprimis vero ad dentes rotarum in machinis, quia simul haud facile dissilit."—*Selectarum Stirpium Historia. Manbemii,* 1788, *p.* 158.

The inner bark is spoken of by Barhamas anthelmintic. The leaves are bijugate, of a deep green, lanceolate, acute, and curved on their outer sides, while their inner margins are straight. The flowers are papilionaceous, with ten distinct, not diadelphous, filaments; the petals are yellow and destitute of smell. The pericarp is a large woody pod of a deep brown or cinnamon colour, ovate oblong, abtuse, two-valved, filled with a farinaceous pulp of a yellowish colour and sweet but mawkish taste, in which lie imbedded from four to eight seeds of considerable size, and somewhat ovate shape; the seeds are separated from each other by transverse septa, forming as many cells as there are seeds. The farinaceous pulp enveloping the seeds is eaten with avidity by the Indians and Negroes, but its taste and odour are repulsive to most Europeans; could it be divested of these it might no doubt prove an agreeable and nutritious article of food. In its recent state it is said to possess purgative qualities. The decoction, and the expressed juice of the leaves are said to be carminative and ecceprotic, and to relieve the pain of colic.

But it is the inodorous, transparent, yellow or reddish resin which exudes from wounds in the bark, and is found also beneath the surface between the principal roots, which constitutes perhaps its most valuable product. This, which Bauhin appears to have confounded in his *Pinax* (p. 404), with that of the *Amyris Elemifera*, is the *gum anime* of the shops, a solution of which in highly rectified spirit, makes a most incomparable varnish. Dale speaking of this resin says—

> "Usus præcipuus est externus in capitis ac nervorum affectibus frigidis, dolorificis, catarrhosis, flatulentis, in affectibus articulorum, paralysi, &c."

According to Lewis in his "*Experimental History of the Materia Medica*," (vol. i., page 103, 3d Edit., Dublin, 1769), this resin is employed by the Brasilians, in fumigating for pains and aches proceeding from cold, and in liniments or plaisters for paralytic affections, bruises, &c.: but adds, that it is rarely used medicinally among us. The spirituous solution is of a yellow colour, has a warm, pungent, aromatic taste, and exhales an agreeable odour. By distillation with water a small portion of essential oil is obtained, which merits a farther trial as an external and internal remedy. The spirituous solution is considered by some equal to that of *guaiacum*, and is given in doses of two or more drachms measure in a glass of wine.

For procuring this resin by incisions in the bark, attention to the period of the moon is essential, for however scepticism may deride the idea, the almost universal concurrence of opinion among those longest resident within or on the immediate confines of the tropics, respecting the influence of the lunar rays, both upon the animal and vegetable kingdom, cannot be wholly founded on delusion,

Since my last paper was written, two facts have been communicated to me by my friend Captain Wright, one of which demonstrates a circulation in the sap wholly unconnected with the annual motion of the earth, and capable of being produced by art at *any* season of the year, though not improbably subject to modification by the action of the moon: while the other demonstrates that it is the action of the lunar rays, and not the operation of insects, as I conjectured, which caused the incipient decomposition of the fish carried across the island on moonlight nights from Plymouth to Scarborough in Tobago.

When the canes are thrashed, as it is termed, or stripped of their redundant leaves, the immediate effect is to cause a descent of the sap into the roots, and if the canes be cut soon after this operation and sent to be ground, they will yield from a hogshead to a hogshead and a half less sugar than if left standing for six weeks or more before cutting, by which time the sap will have reascended into the stem. This is derived from a practical planter, whose repeated experience of the fact must be allowed to outweigh the uninquiring opinions of one who, during his residence of a quarter of a century within the forests of Guayana, does not appear to have deemed it necessary to test the accuracy of his preconceived notions by even the rudest experiment.

The second fact is, that fresh meat hung up in the rigging of a ship in the middle of the Atlantic, where insects can hardly be supposed to exist, if protected from the light of the moon, keeps sweet for an indefinite period, but, if exposed to the action of the lunar rays, becomes quickly tainted.

In the animal system, no less than the vegetable, we have numberless instances of the periodical return of various phænomena connected with life, as in the periodic return of sleeping and waking, the periodic return of the paroxysms of certain complaints; and, from the most remote antiquity, popular opinion has connected the return of certain diseased actions of the brain with the phases of the moon, whence the term *lunacy* is applied, even at the present day, to such complaints, and that of *lunatics*, to those afflicted with them.

This effect is attributed by Baron Von Reichenbach, in his "Researches on Magnetism and certain allied subjects," occupying 270 pages of the supplement to the 53d volume of the "Annalên der Chemie und Pharmacie (conducted by Baron Liebig and Professor Wöhler), to the circulation of terrestrial Magnetism, of which we find it stated, in section iii. § 70. p. 32 of the abstract published in English in February last (1846) by Dr. William Gregory, Professor of Chemistry, in the University of Edinburgh, that

> "Since terrestrial magnetism is subject to variations *which are in connection with the lunar phases*, insomuch that the terrestrial magnetism *reaches a minimum*, in reference to the moon, *at the period of full moon*, one of the causes of humanity comes out of darkness, at least into twilight."

The influence of the moon appears indeed from the experiments of Reichenbach, in many respects, to have considerably exceeded that of the sun; as the following extract from section iv. § 119, page 53, seems to prove:—

> "From the sun it was natural to turn to the moon, and the inquiry here was the more indispensable, that, *as is well known*, numberless terrestrial phenomena, both in healthy and diseased persons, appear to be *more or less under the influence of our satellite, while we cannot yet trace the relations between the cause and its supposed effects*. The first experiment was made with Mademoiselle Maix. It was not easy, as her windows looked north, and it was impossible to reach the moon's rays directly. The author, in this emergency carried an iron wire, one-sixteenth of an inch thick, through two rooms, then across a court, and from thence through three more rooms, in all, to the distance of nearly 100 feet, to a place where it was possible to

obtain the moon's rays. One end of the wire was placed in the patient's hand, the other was attached to a large sheet of copper, which was then, with the usual precautions, exposed to the moonlight. After a short pause, the sensation in the hand began to change from the normal one. Iron and copper wire, by themselves, had always occasioned a sensation of warmth but this, instead of being strengthened by the moonlight, as it was by the sun's, especially beyond the red ray of the spectrum, was rather overpowered by the sensation which followed it. There flowed from the wire so powerful a current of the cool, sunny, pleasurable feeling, formerly noticed, into the hand and over the whole person of the patient, that she considered it six or eight times as strong as she had experienced from the sun's rays. This refreshing coolness increased during several minutes, and then remained stationary during half an hour, as long, that is, as the experiment was continued. The sensation caused by the sun's rays was, to that caused by the moon's, as a cool aura or breath to a cool wind, as she expressed it, and hence the sun was more beneficial to her than the moon, which *acted too violently*. With the wire in the right hand, the sensation was infinitely more pleasant than when it was in the left. But that which occurred *in the case of the moon only*, and not with the sun, was a kind of decided attraction in the whole arm towards the wire, so that she felt a tendency to follow the course of the wire with the hand. On feeling this, she carried her finger slowly along the wire, and, had she not been in bed, would have followed it through its whole length, according to the peculiar attraction she felt. Here was something like the strange attraction exerted by the magnet on cataleptic patients, and of which we can hardly doubt, that it is that irresistible attraction *which affects lunatics*, and which thus would appear conductible through metals. This patient considered the force as purely magnetic, only much stronger; but it must be remembered that her hand was never attracted by the magnet. The difficulties of the locality prevented further experiments with Mademoiselle Maix on this very interesting subject, and the author had recourse to other sensitive patients."

The conclusion drawn by the Baron from this and similar cases is—

"That the moonlight is not mere moonlight; that, although it conveys no heat, it yet possesses, along with its light, a powerful hidden influence, which in all respects agrees with that residing in magnets, crystals, the human hand, and the sun's rays."

We must not rashly deny the existence of this unknown power, because we happen to be ourselves exempted from its influence, since such conduct would partake more of the ignorant dogmatism of the blind man who denied the existence of light and colours, or the deaf man who could not be persuaded of the reality of harmony, because he was insensible to their impressions, than of a rational investigation of facts. We live in an age of wonders, in which the indomitable energies of the human mind are daily penetrating the most abstruse mysteries of nature, and dragging to light wonders undreamt of by our fathers..

Not content with the prismatic analysis of the solar ray, modern researches have detected in it spectra inappreciable save by their sensible effects; and this discovery enables us to convert even the glorious luminary of day into an artist obedient to our will, and the depictor of visible objects with a fidelity to which the mere human artist can hardly hope to attain. Yet who, ten years ago, would have ventured to predict the possibility of fixing the minute outlines of the portrait or landscape, painted by the sun in the camera obscura, without the aid of the artist's hand, and the variable accuracy of the artist's eye.

We admit the reality of the invisible spectra combined with the solar ray, because habit has rendered their effects familiar to us. Yet while we admit their existence, we are as incapable of comprehending their nature as those who are constitutionally insensible to the lunar influence, are incapable of understanding the nature, or appreciating the extent of its power over others.

Were we suddenly deprived of sight, or plunged, before the iris had time to adapt itself to its new situation, into absolute darkness, could we, like the bat, move with unerring certainty and with the greatest rapidity, amidst innumerable obstacles, without impinging against one? Yet the bat, even when cruelly deprived of the organs of vision, flits with a rapidity of which we are incapable, and an accuracy to which we are unable to attain, amidst innumerable obstacles in the most intricate positions, without once coming in contact with them. Are we, however, to question the reality of this power because conscious of nothing analogous in ourselves?

The scepticism of philosophers long derided the prejudice entertained by old women in favour of a metallic teapot with a bright and polished surface, until Leslie demonstrated the fact, and explained its cause by the principles of radiation.

The true province of philosophy is to investigate and not to doubt; to interrogate nature, and calmly await her reply. Let this rule be applied to the popular notions of lunar influence—let the experiments be conducted in a spirit of candour and honesty, in a variety of climates, and under every possible variety of circumstances, both within and without the region of the tropics. Let the opinions of those least liable to yield to the delusions of imagination, be carefully collected, and tested by rigorous observation—let the amount of growth during equal periods of the moon's increase and wane, be carefully measured and faithfully recorded—let the influence of the lunar phases upon the durability of every possible variety of timber, be subjected to the most rigorous examination—and let the circulation of the sap be verified or contradicted by repeated experiments, and then we may hope to arrive at some safe conclusion. Dogmatism is not philosophy, nor irrational scepticism science.

14, *Octagon*, *Plymouth*.

ON THE EXAMINATION OF WATER,

FOR ITS HARDNESS, AND FOR THE INCRUSTATION IT DEPOSITS ON BOILING.

BY PROFESSOR CLARK.

At various times, during the last few years, I have been applied to for information respecting methods I had adopted for examining waters for towns; but ill health has almost always prevented me from returning a satisfactory answer. There has been recently somewhat more occasion for such inquiries in consequence of the Commissioners of Woods and Forests having been pleased to require, as one of the indispensable conditions to a bill for supplying water to a town being presented by them to Parliament, that there shall be given, in reference to the waters already supplied to the town, as well as in reference to the waters proposed to be supplied—

"A statement of the quality of the water as exhibited by chemical analysis, specifying its adaptation for domestic and manufacturing purposes, and its degree of hardness with reference to the tests and scale of Dr. Clark."

I take the liberty to write out one answer to all inquirers; and, imperfect as I am aware the information must be, I hope my friends will receive it with such indulgence as is due to an effort at affording information to others by a person confined to bed by illness, and unfit for any considerable exertion of mind.

The processes alluded to for the examination of waters are two—one for ascertaining the hardness of water; one for ascertaining the alkalinity.

Each of these processes is fully described in the specification of a patent, printed in the number of the *Repertory of Patent Inventions* for October, 1841. (Hodson, publisher, 112, Fleet Street, London). Vol. xvi, p. 225.

A water is, indeed, most materially affected in its fitness for domestic uses and manufacturing purposes, by the degree of its hardness. But many hard waters have the additional objection of depositing earthy matter on being boiled. This matter forms an incrustation on the boiler, and fills up tubes employed in giving passage to the heated water. In this land of steam-engines it need not be told how annoying this quality is. Not only should the Chemist be able to tell, ay or no, whether any such deposit will be formed; but, when one does occur, it is desirable to know how much altogether, and how much of each of the more important kinds of matter will be deposited. Now, in the specification alluded to, there is no express direction given for obtaining this important point of information; because this was not necessary to the invention there described; neither, indeed, had I then contrived a method for the purpose. But ever since September, 1845, I have been accustomed to derive this information from the hardness and the alkalinity of the water, boiled and unboiled. To explain the method of deducing this information is a principal object of the present note.

Referring to the specification, I begin by describing a few improvements that have been suggested by experience, since the specification was enrolled.

PROCESS FOR ASCERTAINING THE HARDNESS OF WATER.

In June, 1843, having occasionally before met with some few specimens of waters, and more especially soft waters from springs, where the indications of the soap test, which in general are remarkably distinct, were obscure, I discovered the cause of this obscurity to be an excess of carbonic acid; that is, an excess over and above what is necessary to form alkaline or earthy bicarbonates. This excess has the property of slowly decomposing a lather once formed.

For the purpose of guarding against an excess of carbonic acid in all cases, I recommend that before you measure out the water for trial, you shake it briskly in a stoppered glass bottle half filled with it, sucking out the air from the bottle at intervals by means of a glass tube, so as to change the atmosphere in the bottle.

In all trials of waters above 16° hardness, not only should such waters, and the distilled water to be used along with them in the trials, be treated in this manner, previous to their being measured out and mixed, but the measured mixtures themselves should be treated in like manner, before any soap test is added to them. The soap test itself should be occasionally so treated before it is measured out.

To obtain uniform results with the soap test, I recommend that as soon as you observe that a lather is formed, such as will remain all over the surface of the water for five minutes, you take a note, but only an *interim* one, of the quantity of the soap test that has been added. In about half an hour you should shake the bottle again, to see whether the lather will still remain for five minutes. If the water under trial do not exceed 4° or 5° of hardness, it is likely to require a little more soap test upon this renewed shaking; but in every case where more soap test is required, let more be added to the water. This latter quantity and the former will together make up the whole soap test that is to determine the hardness of the water under trial. For hours afterwards, unless perhaps the water do not exceed 1° or 2° of hardness, a lather lasting for five minutes may be restored by your shaking the phial. This mode of procedure, by producing a lather whose permanence we may repeatedly verify, will conduce much to the uniformity and accuracy of our trials.

TABLE FOR CONVERTING SOAP TEST MEASURES INTO DEGREES OF HARDNESS.

Ever since detecting the fallacy that might occur owing to an excess of carbonic acid, my health has prevented me from performing such a series of experiments as to afford materials for a table of this kind. Pressed, however, by the present occasion and guided by my former experience, I have endeavoured to frame, as follows, a table worthy of confidence, by comparing together unpublished results obtained since then by others.

Table of the Soap Test Measures, corresponding to 100 *Test Measures of each Standard Solution.*

Degree of Hardness.	Soap Test Measures.	Differences for the next 1° of Hardness.
0° (Distilled water)	1.4	1.8
1°	3.2	2.2
2	5.4	2.2
3	7.6	2.0
4	9.6	2.0
5	11.6	2.0
6	13.6	2.0
7	15.6	1.9
8	17.5	1.9
9	19.4	1.9
10	21.3	1.8
11	23.1	1.8
12	24.9	1.8
13	26.7	1.8
14	28.5	1.8
15	30.3	1.7
16	32.0	

When the measures of soap test necessary to form a lather, with 100 test measures of a water, exactly correspond with a standard solution, then the degree of hardness will be the corresponding integral number found in the first column. Thus 24.9 of soap test will indicate 12° of hardness; 26.7 of soap test will indicate 13° of hardness.

But if the measures of soap test do not exactly correspond with a number in the first column, the hardness will be expressed partly by an integer, and partly by a fraction.

The *integer* will be the hardness corresponding to the next lower number in the soap test column.

The *numerator* of the fraction will be the excess of the soap test measures in question above this number. The *denominator* of the fraction will be the corresponding difference, which follows the soap test in the next column.

Example.—Let 25.8 be the measures of soap test required by 100 test measures of a given water.

24.9 is the next lower number in the soap test column. Therefore 12° of hardness, the corresponding degree, is *the integral part* of the required hardness.

The numerator of the fraction is 25.8—24.9=9. The denominator is the corresponding difference=1.8. *The fraction* itself is $\frac{9}{18}$=.5.

The whole hardness, therefore, is 12.5.

PROCESS FOR ASCERTAINING THE ALKALINITY OF A WATER.

The tests employed are two—test paper and the acid test. Respecting these I have little to add to what is given in the specification.

Test Paper.—The colour should be first separated from the solid matter of the litmus, by boiling, subsidence, filtration, &c. The coloured solution thus obtained being too weak for use, will require to be concentrated by evaporation. The colour will then have to be brought to a proper tint by means of dilute nitric acid, and afterwards applied to the paper by a flat camel hair brush. The only paper that I have found to be sufficiently free from acid or alcaline impurities, to be unexceptionable for test paper, is the drawing paper stamped with the name of Harding.

Acid Test.—In purifying oxalic acid, it is desirable to reject a very small crop, consisting of such of the crystals as fall first. These, I find, contain quadroxalate of potash. I find a little of this salt, even when the acid has been made by means of pure nitric acid and specimens of the best refined sugar of commerce—a circumstance well worthy of the attention of Chemists engaged in the study of vegetation.

DEGREES OF HARDNESS AND DEGREES OF ALKALINITY EXPLAINED.

Degrees of Hardness.—Each degree of hardness indicates as much hardness as would be produced by one grain of chalk per gallon held in solution in the form of bicarbonate of lime, free from any excess of carbonic acid. The degree of hardness caused by a lime salt depends, not on the state of combination of the calcium it contains, but on the quantity of the calcium. If, instead of being in the form of bicarbonate of lime, the calcium this compound contains were in the form of chloride of calcium, or of nitrate of lime, or of sulphate of lime. or even of lime water, the soap test destroyed by it. and consequently the degree of hardness indicated, would be precisely the same.

A quantity of a soluble magnesian salt equivalent to one grain of chalk, destroys a like quantity of soap test, and consequently indicates one degree of hardness. The same is the case with salts of iron, and salts of alumina. Salts of the alkalies do not produce hardness.

Degrees of Alkalinity.—For each degree of alkalinity that a water possesses, a gallon of it will require as much acid to neutralise it as one grain of chalk would require. Hence a solution of lime water, or of bicarbonate of lime in distilled water, should be of the same degree of hardness as of alkalinity. The most usual cause of alkalinity in water, is bicarbonate of lime ; but bicarbonate of magnesia, which causes hardness, likewise causes alkalinity, and bicarbonate, either of soda or of potash, which does not cause hardness, causes alkalinity*.

TO INFER THE DEGREES OF HARDNESS AND THE DEGREES OF ALKALINITY FROM AN ORDINARY ANALYSIS.

For Hardness.—Compute the grains of lime, magnesia, oxides of iron, alumina, in a gallon of the water, each into its equivalent of chalk. The sum of those equivalents will be the hardness of the water.

For Alkalinity.—Compute in like manner, the grains of bicarbonates of lime, magnesia, soda, potash, in a gallon of the water, each into its equivalent of chalk. The sum of those equivalents will be the alkalinity of the water. But the results thus obtained have much less chance to be accurate than the hardness and the alkalinity ascertained directly by means of the soap test and the acid test.

DELICACY OF THE TESTS.

For Hardness.—Suppose the Thames to yield a mean of 14° of hardness. Carefully conducted experiments should then range between 14°.1 and 13°.9 of hardness. That is to say, the mean result of more experiments than one should be within 0°.1 of the extremes; and it is to be remembered, that the hardness of a water may be ascertained repeatedly within an hour. But 0°.1 of hardness is equivalent to one-tenth of a grain of chalk per gallon ; that is, 1 of chalk in 700,000 times its weight of water. But as the operation is performed on only the seventieth of a gallon (1,000 grains), the whole weight of hardening matter that we actually operate upon in this experiment, is a seventieth of fourteen grains, that is, one-fifth of a grain ; and the smallest weight we actually measure to is the seventieth of the tenth of a grain, that is the 700th of a grain. I do not remember any process of equal quantitative delicacy in the whole range of chemical analysis ; and this one is the more remarkable as it is performed with soap test, previously known as almost the rudest and least determinate of chemical reagents.

For Alkalinity.—If the Thames be at 14° of hardness, it would probably yield 13°.1 of alkalinity. Such a water, if tried according to the directions of the specification, should give 13°.1 of alkalinity each time. The difference between the experiments, if carefully performed, should appear not on the first, but only on the second place of decimals. Now, since 1° of alkalinity corresponds to one grain of chalk per gallon, and since the acid test indicates less than 0°.1 of alkalinity, or one of chalk in 700.000 of water, we may safely infer that the acid test will measure one of chalk in one million of water. Thus we obtain, for record, even more accurate results by the acid test than we do by the soap test. Nevertheless, the soap test is, in the abtract, the most delicate; for, although we use nearly the same quantity of each test, yet, in the case of the acid test, we act on the eighth of a gallon ; whereas, in the case of the soap test, we act on only the seventieth of a gallon.

HOW TO MAKE THE FOREGOING PROCESSES AVAILABLE FOR ASCERTAINING THE QUANTITY OF INCRUSTATION THE WATER DEPOSITS ON BOILING.

For this purpose the points to be considered are,—

1. The hardness and the alkalinity of a given water unboiled.

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* When a phosphate of lime is present, as happens rarely and in small quantities, it is probable that for every two degrees of hardness the phosphate occasions, it will produce only one degree of alkalinity ; that is, all the lime in the phosphate will cause hardness ; but one half of it will be neutralised, and only the remaining half alkaline.

2. The like particulars of the same water, after being boiled, without loss of steam for at least two and a half hours, and then cooled and (if necessary) filtered.

From these indications, the weight per gallon of earthy deposit formed by boiling, if there be any, is deduced as follows ;—

Let h = hardness of unboiled.
h' = " " boiled.
$h - h' = H$, that is degrees of hardness lost by boiling, occasioned by the precipitation of earthy salts, which may be either alkaline or neutral, or partly both.

Let a = alkalinity of unboiled.
a' = " " boiled.
$a - a' = A$, that is, degrees of alkalinity lost by boiling, occasioned by the precipitation of alkaline earthy salts.

NOTE.—Observe that H is equal to A only in the case where *all* the precipitate is chalk and carbonate of magnesia, which is but seldom the case.

$H - A$ = So much of the hardness lost by boiling as is produced by the precipitation of neutral earthy salts.

$(H - A) \times 1.36 = B$, that is the above neutral earthy salts calculated as dried sulphate of lime, in grains per gallon.

Collected and represented in a report, thus—

Hardness of the water { unboiled....................................
boiled....................................

Deposit by boiling, in grains, per gallon,—
Alkaline earthy salts, calculated as chalk .. .. A
Neutral earthy salts, calculated as dried sulphate of lime...... B

Total.............................. $A + B$

Alkalinity of the water { Unboiled................................
Boiled.................................

When the alkalinity is only 1° or 2°, it is not worth while boiling the water, as hardly any precipitation will take place.

If you cannot conveniently arrange so as to boil the water without loss of steam, I recommend that you boil it with as little loss as possible, and, when the water has cooled, that you make up the loss in weight of the vessel and its contents, by adding distilled water. Mere boiling causes one change on the saline contents of the water—boiling with evaporation causes an additional change.

I recommend that the alkalinity of a water be always stated by itself in a Report ; that is, not mixed up with the hardness ; perhaps, indeed, it should be given in the appendix to the report ; for persons not familiar with Chemistry are apt to be puzzled about the alkalinity, whereas the degree of hardness and weight of deposit per gallon, almost never give them any difficulty. But the alkalinity should not be altogether omitted from the report, as the statement of it is necessary for a comparison of the results obtained by different Chemists.

It will be for others to decide whether the ascertaining of the quantity of the deposit that a water forms on boiling, should or should not form a part of the chemical analysis serving to specify "its adaptation for domestic and manufacturing purposes," as required by the Commissioners of Woods and Forests.

2, *Argyle Place, Rothsay, Isle of Bute,*
20th February, 1847.

ON PIGMENTS.

BY DR. J. A. STOECKHARDT.

(Continued from page 489.)

METAL PIGMENTS.

(Gold, Silver, and Copper Pigments.)

XXXV. LEAF GOLD AND SILVER.

The *genuine* consists of pure gold and silver beaten into very thin leaves; the *spurious* is made by alloys resembling gold or silver. The false leaf gold is obtained by melting together copper and zinc; the false silver by melting together zinc and tin, more rarely tin, bismuth, and quicksilver. The leaves are applied by means of the white of eggs, gum, glue, oil, or lac varnish, to paper, wood, &c. In order to make them more durable the gilt or silvered objects are often also varnished over with some transparent resinous lacquer.

XXXVI. BRONZES (*metal powder, mosaic gold and silver*).

The bronzes are prepared from genuine or false leaf-gold and leaf-silver by rubbing them with some viscid fluid, *e. g.*, honey or treacle, in order to prevent the adhesion together of the separated particles. When the proper degree of trituration has been attained, the saccharine matter is removed by washing with water. They occur in commerce in the form of a delicate dust with a metallic lustre; the manufactory at Fürth produces the most beautiful bronzes and the greatest variety. They are divided into genuine and false bronzes, and the latter again in gold, silver, and copper bronzes; but with respect to colour into purple red, orange, deep and pale yellow, green and white bronzes. The different hues of colours are generally produced by carefully heating them, in consequence of which a lighter or darker coloured film of oxide is formed, on which the various shades depend. They are either rubbed down with some medium, like common covering colours, or they are strewed superficially, like smalt, on some varnish or glue coating. By a strong pressure after drying the coating assumes the appearance of a uniformly lustrous metallic surface. Silver glittering surfaces are often changed into gold glittering surfaces by varnishing them over with gold varnish.

XXXVII. SULPHURET OF TIN (*mosaic* or *painter's gold, shell gold*) forms delicate gold yellow scales or leaves of an almost metallic lustre, which externally greatly resemble gold bronze, but are much inferior to it in durability. The painter's gold is produced by carefully heating tin with sulphur, to which quicksilver and sal ammoniac are generally added, in order to effect a greater separation of the particles. It is usually employed for gilding and bronzing paper, wood, plaster of Paris, clay, &c.

For ornamenting *confectioner's articles—dragées, gingerbread,* &c., genuine leaf gold and leaf silver should alone be employed.

Method of discovering the Composition of Pigments.

From all that has been before stated it will be obvious that the name of a pigment is not always a safe guide for ascertaining the composition of the same, as the merchant and manufacturer are induced for the purpose of promoting their own interest to vary the names of pigments *ad libitum.* It is, therefore, not to be wondered at, that a pigment which, on account of its poisonous qualities, has been prohibited from being employed in certain trades, is nevertheless introduced again under another denomination. Examples even are not wanting of tradesmen who had most scrupulously avoided the use of Schweinfurth green, but who employed the same material under the name of Leipsic green. Hence chemical analysis is the only certain mode of arriving at the nature of a pigment. But this, if conducted according to the strict rules of Chemistry, will in general be impracticable, on account of the great time and extensive apparatus required; as well also as the minute knowledge of chemical phenomena which the experimenter ought to possess. For the cases here spoken of, the method of testing should be universally applicable, and consequently easy and simple; neither should it require a complicated apparatus. As our object is not to discover all the ingredients which may be contained in a pigment, but only to establish the presence or absence of a limited number of substances, it was supposed that a simple and easy method of testing pigments might be obtained which would fulfil the conditions above-mentioned. With this view a series of experiments were undertaken, the result of which shows that the relation of pigments in general, and especially that of the poisonous ones, to the three following tests, viz. *hydrosulphuret of ammonia*, *solutions of caustic potash* (one part of potash in three parts of water) and *hydrochloric acid*, may be considered as affording, with the aid of the blowpipe, sufficient characteristics of the nature of the different pigments. The apparatus required, therefore, consists of these three tests, a blow-pipe, a spirit-lamp, and some test-glasses; to which may be added a small Marsh's apparatus. This method may be still further simplified if the reactions are allowed to take place on paper instead of in test-glasses. Indeed, in most cases, the latter will be found to be a preferable mode of proceeding, as the reactions generally take place sooner and often more distinctly, even for less practised eyes. A small quantity of the pigment which is to be tested is to be rubbed down with a few drops of water on a common piece of writing paper, and the liquid test dropped on it. In this manner not only the pigment in substance can be tested, but also colours already applied to other substances, such as stained paper, paper hangings, wooden toys, confectionery, wafers, &c., even printed and dyed stuffs, as calico, linen, &c., may be easily examined by this method. In the latter cases, attention must be paid to the medium by which the colours have been fastened to the different stuffs. If this consists of a substance soluble in water, *e. g.*, gum, or glue water, white of eggs, &c., or if it forms only a very thin coating, as *e.g.* the wax soap on the glazed stained paper, the reaction is not prevented, but merely delayed. In many cases, however, the effect is accelerated by scratching off the colour on the spot touched by the test. So also if the colour be fastened with or covered over by lac varnish the same expedient may be resorted to. Though the test may not dissolve the resinous medium, still by scratching it off, sufficient of the colouring matter is exposed to enable a very distinct reaction to take place, although it may proceed slowly.

But the reaction is uncertain when oil varnish has been used as the medium; because this is insoluble in watery fluids, and so envelopes the colouring matter, that the direct effect of the test upon the pigment is completely prevented. Oil varnish, however, is seldom employed for fixing colours which are likely to become the subject of medico-legal inquiry. But supposing that it had been employed, the pigments combined with it, even if they were previously poisonous, cannot now in this insoluble combination be considered as noxious to health.

The phenomena which take place on experimenting with the blowpipe, can be produced in a more simple and more striking manner, if the piece of paper smeared over with the pigment (or the stained paper, wood, wafer, linen, &c. &c.) be fixed to the point of a penknife or pin and burnt. Instead of the flame of spirit of wine a common candle may be used for these experiments. The combustion and subsequent ignition of the ashes must not, however, be effected in the flame of the candle; but above the cone of flame, in order to prevent any change taking place in the pigment itself, or in the remaining ashes through the soot emitted from the flame.

BLUE PIGMENTS.

The following tables show the chemical characteristics of the blue colours as already described:

1. EXAMINATION IN THE HUMID WAY (ON PAPER).

With hydro-sulphuret of Ammonia	Unchanged; with hydrochloric acid.	Unchanged	Ashes blue, earthy..	*Cobaltic Ultramarine*	(II).
			Ashes blue, cohering together [semi-fused]	*Smalt*	(III).
		Decolourized		*Lapis Lazuli Blue*..	(I).
		Reddened		*Litmus*..............	(VII).
	Greenish-yellow.	Dried, again becomes blue; with potash	Unchanged	*Indigo*	(VI).
			Yellow, dried paler blue	*Blue Carmine*	(VI A).
			Yellow, dried decolourized	*Soluble Indigo*	(VI B).
				Tincture of Indigo ..	(VI C).
		Dried grey or decolourized; by potash quickly decolourized ..		*Berlin Blue*	(IV).
	Brownish to blackish brown; by hydrochloric acid	Pale red		*Logwood*	(VIII).
		Yellow......		*Copper Blue*	(V).

2. EXAMINATION IN THE DRY WAY (BY COMBUSTION OF THE PIGMENT STREWED ON PAPER).

Ashes	Blue	Earthy	*Cobaltic Ultramarine*	(II).
		Coherent [semifused]	*Smalt*	(III).
		To greenish, earthy	*Lapis Lazuli Blue*..	(I).
	Brownish yellow to reddish		*Berlin Blue*	(IV).
	Reddish brown, afterwards greyish black........		*Copper Blue*	(V).
	White, light	Edge of the burning paper purple..	*Indigo*	(VI).
		....	*Blue Carmine*	(VI A).
		....	*Litmus*..............	(VII).
	Yellowish grey		*Logwood*	(VIII A).

PROFESSOR SCHÖNBEIN'S GUN-COTTON.

SPECIFICATION OF THE PATENT.

The specification of this patent (taken out in the name of Mr. John Taylor, of the Adelphi,) is to the following effect:—The patentee states that the invention consists in the manufacture of explosive compounds applicable to mining purposes and to projectiles, and as substitutes for gunpowder, by treating and combining matters of vegetable origin with nitric and sulphuric acids. The matter of vegetable origin which he prefers as being best suited for the purposes of the invention is cotton, as it comes into this country freed from extraneous matters; and it is stated to be desirable to operate on the clean fibres of the cotton in a dry state. The acids are nitric acid of from 1.45 to 1.50 specific gravity, and sulphuric acid of 1.85 specific gravity. The acids are mixed together in the proportion of one measure of nitric acid to three measures of sulphuric acid, in any suitable or convenient vessel not liable to be affected by the acids. A great degree of heat being generated by the mixture, it is left to cool until its temperature falls to 60 or 50 degrees Fahrenheit. The cotton is then immersed in it, and, in order that it may become thoroughly impregnated or saturated with the acids, it is stirred with a rod of glass or other material not affected by the acids. The cotton should be introduced in as open a state as practicable. The acids are then poured or drawn off, and the cotton gently pressed by a pressure of glazed earthenware, to press out the acids,—after which it is covered up in the vessel and allowed to stand for about an hour. It is subsequently washed in a continuous flow of water until the presence of the acids is not indicated by the ordinary test of litmus paper. To remove any uncombined portions of the acids which may remain after the cleansing process, the patentee dips the cotton in a weak solution of carbonate of potash composed of one ounce of carbonate of potash to one gallon of water, and partially dries it by pressing as before. The cotton is then highly explosive, and may be used in that state; but, to increase its explosive power, it is dipped in a weak solution of nitrate of potash, and, lastly, dried in a room heated by hot air or steam to about 150° Fahr. It is considered probable that the use of the solutions of carbonate of potash and nitrate of potash may be dispensed with, although actual experience does not warrant such an omission. The patentee remarks, that nitric acid may be employed alone in the manufacture of explosive compounds; but that, as far as his experience goes, the article when so manufactured, is not so good, and it is far more costly. When used, care should be taken to employ a much less quantity by weight, to produce the same result, than of gunpowder; and it has been found that three parts by weight of the cotton produce the same effect as eight parts by weight of the Tower-proof gunpowder. The cotton, when prepared in the manner before mentioned, may be rammed into a piece of ordnance, a fowling-piece, or musket; or may be made up into the shape of cartridges; or may be pressed, when damp, into moulds of the form of the bore of the piece of ordnance for which it is intended, so that, when dried, it shall retain the required figure; and it may also be placed in caps like percussion caps, and made to explode by impact. Lastly, the patentee states, that, although he prefers the use of cotton, other matters of vegetable origin may be similarly treated with acids to form an explosive compound; and that acids of an inferior specific gravity may be employed. The patentee having thus described the nature of the invention, and in what manner the same is to be performed, states that he does not confine himself to any of the details above specified, so long as the peculiar character of the invention is retained,—viz., the manufacture of explosive compounds from matters of vegetable origin by means of acids. But, to adopt the patentee's own expression, "What I claim, is the manufacture of explosive compounds from matters of vegetable origin, by means of nitric acid, or nitric and sulphuric acids."—*Mechanic's Magazine.*

ON THE HYDRATE OF CARBONATE OF LIME.

BY TH. SCHEERER.

Scheerer examined a number of small crystals, which had been formed in the bed of a brook, and which consisted chiefly of carbonate of lime and water. A quantity of them having been freed from the adhering water by pressure between blotting-paper, they were exposed to a low red heat, by which they lost about forty-eight per cent. in weight. The residue was rendered somewhat black by a small quantity of organic matter, and contained 1.07 per cent. of silicic acid, aluminous earth, and oxide of iron. The form of the crystals could not distinctly be recognised; some rhombohedra were, however, visible. After some time, when the water in the brook had become a little warmer, the crystals disappeared, but in their place Scheerer found a fine globular, crystalline slime, consisting of common carbonate of lime. This was, doubtless, the hydrate ($CaO, CO_2 + 5 HO$) found by Prince Salm-Hostmar, and which, according to the analysis of Pelouze, contained 47.08 per cent of water. Pelouze found the salt, which he examined, in a solution of lime-water, lime, and sugar-water, in the winter. It is very likely, that of those five equivalents of water, three equivalents are contained in it as basic water; they appear at least to have a function quite different to those of the others, for when Pelouze poured over the crystals boiling absolute alcohol, two equivalents were extracted, whilst three equivalents remained behind.—*Poggend. Annalen.*

LAW FOR REGULATING THE SALE OF POISONS IN FRANCE.

Ordonnance of the King, issued at the Palace of St. Cloud, 29th Oct., 1846.

SECTION I.—COMMERCE OF POISONOUS SUBSTANCES.

Clause 1.—Whoever wishes to engage in the commerce of one or more of the substances comprised in the table annexed to this ordonnance, must previously make a declaration before the Mayor of the Corporation stating where his establishment is situated.

Chemists, makers, or manufacturers, using one or more of the substances alluded to, will be required to make a similar declaration.

The aforesaid declaration will be inserted in a register kept for that purpose, and a copy given to the party making it. It must be renewed in cases of removal.

Clause 2.—The substances to which this ordonnance applies, cannot be sold or delivered to any but merchants, Chemists, and makers or manufacturers who have made the aforesaid declaration, in accordance with the preceding clause, or to Pharmaciens.

The substances alluded to must not be delivered, without an order written and signed by the purchaser.

Clause 3.—All purchases and sales of poisonous substances must be entered in a special register, and signed by the Mayor or Commissary of Police.

The entries must be made at the time of the purchase or sale, and no blanks left in the register; they must state the kind and quantity of the substances bought or sold, also the names, professions, and residences of the buyers and sellers.

Clause 4.—The makers or manufacturers using any of these poisonous substances, must superintend the employment of them in their establishments, and describe this employment of them in a register made in conformity with the first paragraph of clause 3.

SECTION II.—ON THE SALE OF POISONOUS SUBSTANCES BY PHARMACIENS.

Clause 5.—Poisonous substances are only to be sold, for use in medicine, by a Pharmacien, and on presentation of the prescription of a Physician, Surgeon, Officer of Health (*officier de santé*), or a recognised veterinarian.

This prescription must be signed and dated, and the dose of the substance ordered written in full, as also its mode of administration.

Clause 6.—The Pharmacien must copy the aforesaid prescription in full, in a register made in conformity with the first paragraph of clause 3.

These transcriptions must be made at the time, and without leaving any blanks in the register.

The Pharmacien must attach his seal to the prescription, and mark upon it the day on which the medicine was delivered, and the number attached to the copy in the register.

The register must be preserved for at least twenty years, and produced upon any authorised requisition.

Clause 7.—Before delivering the medicine, the Pharmacien must attach to it a label, containing his name and address, and stating whether it be for internal or external application.

Clause 8.—Arsenic and its compounds must not be sold for any but medicinal purposes, unless combined with other substances.

The formulæ for these preparations will be determined, subject to the approbation of the Secretary of State for agriculture and commerce,—

By the Professors of the Royal Veterinary School of Alfort, for the treatment of domestic animals;

By the School of Pharmacy, for the destruction of noxious animals, and the preservation of skins and objects of natural history.

Clause 9.—The preparations mentioned in the preceding article must not be sold by any but Pharmaciens, and only to householders who are known.

The quantities delivered, and also the names and residences of the purchasers must be entered in the special register.

Clause 10.—The sale and use of arsenic and its compounds for the preparation of grain, the embalming of bodies, and the destruction of insects, are prohibited.

SECTION III.—GENERAL ARRANGEMENTS.

Clause 11.—Poisonous substances must be always kept by merchants, makers or manufacturers, and Pharmaciens, in a safe place, under lock and key.

Clause 12.—The conveyance, package, transport, warehousing, and employment of these substances, must be effected by carriers, merchants, and manufacturers, with the necessary precaution for preventing all accidents.

The casks, wrappers, or packages, which have been used for containing these poisonous substances, must not be applied to any other use.

Clause 13.—In Paris, and within the jurisdiction of the Prefecture of Police, the declarations contained in clause 1, must be made before the Superintendent of Police.

Clause 14.—Independently of the visitations which are made in virtue of the law of the 21st of March, 1803, the Mayor or Commissioner of Police, assisted, if necessary, by a Doctor of Medicine, appointed by the Superintendent of Police, shall ascertain that the regulations of this ordonnance are observed.

They shall visit for this purpose the shops of Pharmaciens, and the warehouses of merchants and manufacturers who sell or employ the aforesaid poisonous substances; they shall examine the registers, and report any omissions.

Their reports shall be transmitted to the law officer of the king, that the punishment awarded by the law of the 19th of July, 1845, may be executed.

Clause 15.—The Secretary of State for the department of Agriculture, the Keeper of the Seals, and the Secretary of State for Justice and Religion, are charged with the execution of this ordonnance in their respective departments.

The Table of Poisonous Substances annexed to the foregoing Ordonnance.

Acetate of mercury
" " morphia
" " zinc
Arsenious acid, its compounds and preparations
Hydrocyanic acid
Aconite and its compounds
Eau de Rabel
Anemone pulsatilla, and its preparations
Atropine
False Angustura, and its preparations
Belladonna, and its preparations
Brucia, and its preparations
Bryony, and its preparations
Cantharides, and their preparations
Ammoniacal carbonate of copper
Sabadilla, and its preparations
Chloride of antimony
" " morphia
Ammonio-chloride of mercury

Chlorides of mercury
Hemlock, and its preparations
Codin, and its preparations
Colchicum, and its preparations
Colocynth, and its preparations
Conia, and its preparations
Cocculus Indicus and its preparations
Cyanide of mercury
Daturine
Digitalis, and its preparations
Elaterium, and its preparations
Black and white hellebore, and their preparations
Emetine
Tartar emetic
Euphorbia lathyris, and its preparations
Euphorbium, and its preparations
Saint Ignatius's beans, and its preparations
Oil of cantharides
“ hemlock
“ croton
“ euphorbia lathyris
Iodide of ammonia
“ “ arsenic
“ “ potassium
“ “ mercury
Kermes's mineral
Laudanum, its compounds and mixtures
Cherry-laurel, and its preparations
Pearson's arsenical liquor
Fowler's ditto
Morphia and its compounds
Narcine
Narcissus pseudo-narcissus
Narcotine
Nicotianine
Nicotine
Ammonio-nitrate of mercury
Nitrates of mercury
Opium
Oxide of mercury
Picrotoxine
Jatropha curcas
Rhus radicans
Savine
Solanine
Golden sulphur of antimony
Ergot of rye, and its preparations
Stavesacre
Sulphate of mercury
Strychnia, and its compounds
Tartrate of mercury
Turpith mineral
Veratria

On the appearance of the foregoing ordonnance, a commission was appointed by the Society of Pharmacy of Paris to consider the probable effect of this alteration of the law upon the body of Pharmaciens. This commission presented their report to the Society, at a meeting held on the 6th of January, 1847, in the form of a memorial addressed to the Secretary of State for Agriculture and Commerce. In this report, which is signed by the President and Vice-President of the Society, and several of the leading Pharmaciens of Paris, the memorialists state:—

> "The ordonnance of the 29th of October, relative to the sale of poisonous substances, is calculated to affect the interests of Pharmacy no less than those of commerce, industry, and manufactures.
>
> "An important part of the medical body, the Pharmaciens, have never remained indifferent to measures in any way affecting the public health; they have always favoured those which the wisdom of the government may have adopted for protecting society against real dangers; and especially when it relates to the protection of the lives of citizens against criminal attempts or deplorable errors, they are always ready to offer their active co-operation.
>
> "In this point of view the motives which have dictated the ordonnance in question, have obtained the unanimous approbation of French Pharmaciens.
>
> "Unfortunately, in the difficult task of reducing these motives to practice, they have seen with deep regret, that severe measures, well intended for bringing under the cognizance of the law, the sale and use of certain substances which have been applied to criminal purposes, have been extended to a number of other substances, which, although powerful, are not calcu-

lated, from their nature, in any way to be rendered dangerous to society, through criminal intentions or negligence. In this way new and numerous restraints have been added to the already troublesome exercise of their profession. And this, if not to the detriment, at least without tending to the benefit, of the public.

"The Society of Pharmacy of Paris, including the Director and most of the Professors of the School of Pharmacy, which may be considered to represent in the most complete manner the profession of Pharmacy, beg to lay before the Minister the wishes of the respectable body which they represent.

"They have zealously applied themselves to the study of this arduous question, the solution of which is contemplated by the royal ordonnance, and they believe that they have found the true solution of it, the only one at least which is reconcileable with the numerous interests involved—that is to say, the interests of commerce, of industry, manufactures, and Pharmacy, together with public security. This solution, which appears to meet all exigencies, is no other than the *definition* of *poison* in a *preventive* point of view; and the application of this definition to the examination and appreciation of poisonous substances, the sale of which ought to be the object of *preventive measures.*"

The report then enters into a lengthened discussion on the subject of the ordonnance, pointing out very clearly the impropriety of retaining most of the substances enumerated in the list of poisonous substances to be made subject to the new law.

The arguments adduced are summed up with the following

CONCLUSIONS:

"1st.—That the table of poisonous substances annexed to the ordonnance of October is incomplete, inexact, and arbitrary.

"2d.—That it fetters and renders almost impossible the exercise of Pharmacy, without promoting the security of the public.

"3d.—That the severe prohibitions which it imposes on Pharmaciens are quite at variance with the necessary concessions, extended to commerce and industry, and constitute an inequality, we might say, an injustice.

"4th.—That the regulations of the ordonnance, wise and commendable in as far as it applies to restrictions on the sale of many poisonous substances really dangerous to society, completely fail in their purpose, for want of proper discrimination, and from attempting to embrace too much.

"Consequently we ask—

"1st.—That the ordonnance of the 29th of October, and the table of poisonous substances, the objects of the preventive regulations instituted, be modified.

"2d.—That this be effected so as to give greater liberty to the Pharmacien in the exercise of his profession, and the greatest liberty to commerce and industry compatible with the exigencies of public security.

"*As the means of affecting this, we propose*—

"1st.—That a *definition* of the term *poison* be given, considered in reference to *public security*, and the *preventive regulations* required for its maintenance.

"2d.—That this definition serve as the basis for the preparation of a list of poisonous substances, by which that attached to the ordonnance of October shall be replaced.

"3d.—That the preventive regulations of the ordonnance be applicable only to such new list.

"4th.—That in reference to commerce and industry, as well as to Pharmacy, it be only necessary to make entries in the register, on the sale of poisonous substances to the consumer, and not from merchant to merchant, or to licensed manufacturers already authorised to sell and use these substances.

"We annex—

"THE DEFINITION OF POISON IN A PREVENTIVE POINT OF VIEW.

"*All substances are considered as poisons in a preventive point of view, that are possessed of a degree of activity, and of such properties, that they occasion death when administered in small doses, and may be conveyed into the system without being perceived by the senses.*

"We have given a list prepared according to the spirit of this definition:

Alkaloids of opium and their salts
Arsenious acid
Soluble arsenites and arseniates
Hydrocyanic acid
Brucine, and its salts
Atropine
Cantharidine

Veratrine
Bichloride of mercury
Bicyanide of mercury
Picrotoxine
Daturine
Strychnine
Cyanide of potassium

FREE TRADE IN POISONS IN ENGLAND.

A TRIAL for manslaughter, by poisoning with Godfrey's cordial, took place at Guildford, on Saturday last, and it came out on the cross-examination of one of the witnesses, that laudanum and Godfrey's cordial were sold at different shops in the town, in common with *grocery*, *cheese*, *candles*, and *drapery!* One of the shopmen, in answer to a question put to him by the counsel for the defence, said very innocently that he did not know whether they kept prussic acid and arsenic, as well as laudanum, among their articles of grocery.

Not long since a superintendent of police went in disguise to a general shop in a country village, and asked for two pennyworth of arsenic. It was immediately weighed in the scales in which coffee and other articles were weighed, and handed to him by the old woman who kept the shop. Upon asking her whether she was not in the habit of marking "poison" upon articles of this kind? her answer was, "Lor bless you, I can't write to begin with, and then it would frighten people if poison was written on it." This experiment was made in order to ascertain with what facility enough arsenic might be procured to destroy the lives of almost *one hundred persons*, and it was perfectly successful! It furnishes a clue to the cause of the abundant occupation given to coroners, magistrates, judges, barristers, and others, in detecting and punishing individuals for the perpetration of crimes which the Government takes not the slightest pains to prevent.—*London Medical Gazette.*

Central Criminal Court.

BEFORE MR. JUSTICE COLERIDGE.

TRIAL OF DR. CRONIN FOR MANSLAUGHTER.

THE prisoner, who had been admitted to bail, surrendered at an early hour, and was placed in the dock; but at the request of his counsel (Mr. Clarkson) was accommodated with a chair.

On the learned judge taking his seat on the bench,

The Clerk of the Arraigns read the various counts in the indictment, which charged the prisoner, Dennis Cronin (aged 40), described in the calendar as an apothecary, with the manslaughter of Sarah Ellen Collyer, by causing to be administered to her a certain medicine, which she, not knowing the contents, swallowed, and died.

Mr. Payne stated the case for the prosecution. The learned counsel said they were about to enter upon a serious and important inquiry, but one in which he should not think it his duty to occupy much time. The prisoner was charged with manslaughter, in having prescribed a certain medicine for a young lady, now unfortunately no more. It would appear in evidence, that within half an hour after the deceased had taken a portion of the draught, she died. She was only twenty-two years of age, and was not considered to have any dangerous symptoms. It would also appear that one ingredient in Dr. Cronin's prescription had not been used in the mixture, which would be a material point to consider during the inquiry, as to what change that omission might make in the character of the medicine. Apart, however, from technicalities, the points the jury had to consider, were, first whether Dr. Cronin's prescription was the immediate cause of the death of the young lady; and, secondly, whether it was penned under gross and culpable ignorance, or gross and culpable recklessness. If he had been dealing in materials of which he did not know the precise nature and character, he was clearly guilty of manslaughter, although no one could for a moment suppose there was any intent to murder or take away life. He (Mr. Payne) was bound to state that he believed the prisoner to be a gentleman of education; that he had regularly studied medicine; and that being the case, if he was not ignorant of the contents of his prescription, the question would be, was he or not guilty of incaution, rashness, or recklessness? The late learned Justice Bailey said that if death ensued from the rash and incautious administration of medicine, the party administering it was guilty of manslaughter, and if gross ignorance was proved, the same offence was committed. For instance, if a party administered laudanum for the cure of tooth-ache, or any other pain, and not knowing the proper quantity, and death ensued, if the patient willingly took the poison, it would not do away with the offence of manslaughter, as it would prove gross ignorance. On the present occasion, the jury would say whether death was caused by the medicine prescribed by the prisoner, but before they came to a decision, they would hear evidence as to whether the fact of one ingredient being omitted, altered the nature and character of the prescription. He was far from saying that a professional man was to be held responsible in cases where the medicine recommended for the benefit of health had a contrary effect to that anticipated; medical men had a difficult, an arduous, and an important duty to perform, and, therefore, all reasonable allowance should be made. In this case, however, it would be shown that, on a *post mortem* examination, death had ensued from the effects of prussic acid, several parties apparently not knowing the strength of the other ingredients in the prescription. The learned counsel then read the prescription, as follows:—

"Compound spirit of ammonia, two drachms, tincture of opium, sixteen drops, prussic acid (Scheele's strength) four drops, compound strychnine powder, two grains, bitter almond water, six ounces, of which make a mixture, and take two spoonfuls three times a day.

"*February* 3. Miss Collyer. D. C."

Now it appeared that the Chemist to whom this prescription was sent had none of the compound strychnine powder, and, therefore, as he before said, a question would arise whether the omission of this ingredient in the medicine was the cause of death; if they were of that opinion, a verdict of "not guilty" must be recorded; but if they were satisfied that the omission of the powder was not the cause, then the prisoner was responsible for the offence with which he was charged. The law of this country was so jealous of human life, that all cases of death, under the least suspicion, were strictly inquired into; and if on the part of any individual, gross negligence, ignorance, or recklessness towards the deceased could be proved, he was guilty of the crime of manslaughter, and punishable at the discretion of the Court, according to the circumstances attending the case. After these observations he would proceed to call witnesses.

John Pounds stated he was a cousin of the deceased. He produced the bottle which had contained the medicine prescribed by the prisoner. Deceased applied to Dr. Cronin for advice; he did not call upon her. Almost immediately after deceased had swallowed the medicine she rose from her chair and exclaimed "Oh dear, how queer I do feel." I should say she had taken rather more than a tablespoonful of the mixture. She went towards the garden; witness followed her, and in about twenty-five minutes afterwards she fell on the ground and died. Was not certain the prescription now produced was the same as that written by Dr. Cronin, but the paper was similar to it. Did not recollect any remark made by the prisoner at the time he gave the prescription.

Cross-examined by Mr. Clarkson.—I am in rather a weak and nervous state of health. The deceased went to ask the advice of Dr. Cronin, having heard that he was a physician of first-rate ability and skill. Deceased had taken one bottle of medicine prescribed by the prisoner before she took the draught from the effects of which she died. The prescription was made up by a Chemist named Corfield. I did not hear my cousin say she felt great relief from the first bottle of medicine prescribed by prisoner.

John Andrew Johnson was the next witness called, and said, I knew the deceased, Miss Sarah Ellen Collyer; she resided at 15, High-street, Camden Town. I heard of her death the same day as she died; it was a short time after she took about one and a half spoonfuls of medicine.

Cross-examined.—Did not hear at the time that one of the ingredients in the prescription had been left out.

Mr. Daniel Corfield was examined.—He deposed that he was a Chemist, and resided in High-street, Camden Town. He remembered Mr. Johnson coming to his shop on the evening of the 15th of February, with a prescription for a mixture, which was to be composed of two drachms of compound spirit of ammonia, sixteen drops of tincture of opium, four drops of prussic acid (Scheele's strength), two grains of compound strychnine powder, and six ounces of bitter almond water. The prescription was dated the 3d of February. Having no compound strychnine powder or bitter almond water, he sent his boy to fetch some; and he brought back from Mr. Bell a twelve-ounce bottle of bitter almond water, and having placed the other ingredients in a bottle, with the exception of the strychnine powder, he filled it up with six ounces of the bitter almond water, and gave the mixture to Mr. Johnson. In addition to this evidence he stated that having been in business as a Chemist for twelve years, he never before heard of compound strychnine powder or bitter almond water being used as the ingredients of medicine.

Cross-examined.—He was entirely ignorant of the qualities of bitter almond water and compound strychnine powder, and they were not named in any recognised Pharmacopœia. The last edition of the Pharmacopœia was published eleven years ago; and since that period there had no doubt been a great advance in medical science, and many new discoveries in medicine had been made.

Mr. Clarkson.—Do you know anything of the character of strychnine powder, or whether it would be calculated in any way to neutralise the effect of the other ingredients of the mixture?

Witness.—I don't know anything of the quality or effect of this powder.

Mr. Clarkson.—And yet you did not communicate the fact of its having been omitted to the party to whom you gave the medicine?

Witness.—I did not.

Mr. Clarkson.—In justice to Dr. Cronin, will you tell us whether you sent the prescription to Mr. Bell, from whom you obtained the bitter almond water?

Witness.—I did not.

Mr. Clarkson.—Then he had no means whatever of knowing how it was to be used, whether internally or externally.

Cross-examination.—The bitter almond water appeared only to be intended as a medium for mixing the other ingredients and making up the quantity. The different articles mentioned in the prescription he should say were calculated to neutralise each other—the spirit of ammonia, for instance, would decompose the prussic acid. He was not aware that there were a great many different descriptions of bitter almond water, and that some were deadly poison while others were perfectly harmless. It was evidently the intention of the prescription that the simple bitter almond water should be used, and not the concentrated essence of the bitter almond, and then only as a vehicle for mixing the other ingredients.

Mr. Clarkson.—And you filled up the bottle with six ounces of deadly poison?

Witness.—I filled it up with the bitter almond water that I received from Mr. Bell.

Mr. Clarkson.—Without meaning anything offensive, will you allow me to ask you whether persons who follow the profession of a Chemist undergo any medical examination before they do so?

Witness.—They do not.

Mr. Justice Coleridge here interposed, and observed that to say the least of it, the act of pretending to make up a prescription sent by a Physician, without putting in all the ingredients mentioned in it, was most monstrous. Although not a fraud in the ordinary sense of the term, still it was one to the person for whom the medicine was intended. Such a proceeding was very dangerous in any case, and he was not prepared to say what the effect had been in the present instance.

Mr. Morson, to whom the first application was made by Mr. Corfield's messenger for the powder and the bitter almond water, was next examined; but he merely proved that having been in business as a Chemist for a great many years, he had never heard of bitter almond water being used in compounding medicine for internal administration.

Mr. Jacob Bell deposed that he received an order from Mr. Corfield for the bitter almond water and the strychnine powder. He sent the bitter almond water, and a formula for compound strychnine powder, which he found in a book to which he referred. There were about twenty-two different descriptions of bitter almond water used on the continent, but none recognised by authority in this country; looking at the prescription, he should not know what strength was required; and if such a prescription had been sent to him, he should not have made it up without communicating with the physician. Different preparations were used as vehicles for the administration of medicine, some being poisonous, and others harmless; but in the former case he should expect the prescription would denote the strength that was to be used. Chemically speaking, he was of opinion that the omission of the strychnine powder would not at all affect the quality of the mixture in question, excepting that the omission of a poisonous ingredient might render it less poisonous. Strychnine powder was a preparation from nux vomica; but the quantity of the compound powder mentioned in the prescription, if prepared according to Dr. Cronin's private formula, would in itself have been perfectly harmless.

Cross-examined.—If you had seen the prescription, would you have known that the bitter almond water was merely intended as a vehicle for the administration of the medicine?—I should not have known it, but should have supposed it probable. Should you have used a concentrated bitter almond water in such a prescription?—I should not have used any bitter almond water without enquiring what strength was intended. I had no means of knowing whether it was to be used internally or externally, or in fact to what purpose it was to be applied. If I had known that the bitter almond water he sent was to have been used internally, I should not have put the word "poison" upon the bottle, because I was sending it to a Chemist; but if a Chemist in such a case admitted, although in that profession, that he was entirely ignorant of the qualities of the article, then I should certainly have given the requisite information. The article I sent was a concentrated bitter almond water, but there is some of a more powerful description.

Mr. *Justice Coleridge* inquired of the witness whether, when Chemists sent out the concentrated bitter almond water, it was not customary to label it as such?

The Witness said it was not customary to do so, as the word *concentrated* had no definite meaning in this case, being merely a comparative term.

Mr. Clarkson.—Are you acquainted with two formulæ for bitter almond water, given by Gray in his *Supplement to the Pharmacopœia*, one called concentrated, the other not? Yes; but Gray's bitter almond water is not specified in the prescription. Gray is not an authority, any person may publish formulæ.—Do you recognise the authority of Liebig, Orfila, and other scientific Chemists? Yes; but we are not under their jurisdiction in dispensing prescriptions.—Under whose jurisdiction are you? The College of Physicians.

In answer to further questions put by Mr. Clarkson, the witness said that, although he did not consider the quantity of bitter almond water taken was sufficient to kill a horse, that there was enough to destroy a human being. He likewise said that there was no doubt the Physicians and Chemists of the present day were infinitely in advance of the existing Pharmacopœia.

Re-examined.—In his opinion, the prescription should have defined the strength of the bitter almond water that was to be made use of.

Mr. John Edward Spratt, Chemist, deposed that he kept five descriptions of bitter almond water—two English and three foreign. He was in the habit of making up Physicians' prescriptions, and constantly used bitter almond water. If the word *concentrated* was not mentioned in the prescription, he should use the strength stated in Gray's Pharmacopœia, which would be quite harmless.

Mr. Justice Coleridge.—Then in your opinion the omission of the word *concentrated* was an indication that the weak description of bitter almond water was intended to be used in the prescription.

Witness.—Certainly; if this prescription had been sent to me I should have used the weak compound.

Mr. Justice Coleridge.—And if you had done that would the mixture have been harmless?

Witness.—I conceive so.

The learned Judge here inquired of Mr. Payne whether he thought the case ought to be carried any further?

Mr Payne said he certainly thought, after the evidence that had just been given, that the matter was too doubtful to justify a conviction.

His Lordship observed that it appeared perfectly clear that a Chemist possessing the ordinary knowledge of his profession must have known that a weak description of bitter almond water was intended to be used for the prescription. Mr. Corfield did not appear to have known anything upon the subject, and he did not give the prescription a fair chance.

The Jury then deliberated together for two or three minutes, when

Mr. Clarkson observed, that perhaps it would be more satisfactory to all parties that another medical witness should be examined.

Dr. Robert Venables, a member of the College of Surgeons, and lecturer on forensic medicine, was accordingly called, and after having stated that, upon analysis, he discovered sufficient prussic acid in the liquid of which the deceased had partaken, to account for her death, he said, that, looking at the prescription, he should have expected that the ordinary weak compound of bitter almonds would have been used, and that was perfectly harmless. He also said that if the strychnine powder had been added, although it would not have had any chemical effect, it would have acted physiologically upon the system, and would have had a similar effect to ammonia in neutralising the prussic acid.

The Jury here interposed, stating that they were quite satisfied with the evidence that had been adduced, and they at once returned a verdict of Not Guilty.

Mr. Clarkson observed that if the case had gone further he had twenty Chemists present to prove that bitter almond water was constantly an ingredient in the prescriptions made up for Physicians.

Mr. Justice Coleridge ordered the defendant to be immediately discharged.

REVIEWS.

MEDICINES, THEIR USES AND MODES OF ADMINISTRATION. By J. MOORE NELIGAN, M. D. Second Edition. Dublin : Fannin and Co., 1847. Pp. 485.

THIS work seems designed to occupy a position between those of the more elaborate treatises on Materia Medica, and the mere manuals intended for the use of students. Dr. Neligan's work, is perhaps, as a book of reference, better adapted for the medical practitioner who requires only a brief and general account of the natural and chemical history of drugs, than for the Chemist and Druggist, who cannot study these substances too much in detail; still it will, no doubt, be found useful by many even of the latter class. That it has been approved by the profession, may be inferred from the rapid sale which the first edition has met with, and the present edition has received many additions and improvements.

A DETAIL OF EXPERIMENTS PROVING THE IDENTITY OF COW-POX AND SMALL-POX. By JOHN BADCOCK. Brighton : H. J. King. Pp. 48.

THE author of this little pamphlet, a Chemist and Druggist, and Member of the Pharmaceutical Society, residing at Brighton, having himself suffered from a severe attack of small-pox shortly after vaccination, undertook a series of well-concerted experiments, with the view of solving certain questions which have arisen in relation to the occasional failure of the protective influence of vaccination. The experiments were conducted under the superintendence and with the assistance of the leading medical men of Brighton, and the result has been the addition of some important and well authenticated facts to the previous knowledge of the profession on this subject. The pamphlet before us consists of a modest, judicious, and able statement of the circumstances under which the investigation was undertaken, and of the conclusions which have been drawn from the results.

Handbuch der Organischen Chemie, von Leopold Gmelin, *Geh. Rath und Professor in Heidelberg.* 1te Lieferung. Heidelberg: Universitäts. Buchhandlung, von Karl Winter, 1846.

How closely our eventful age corresponds with the era graphically described by the Hebrew prophet, when "many shall run to and fro, and knowledge shall be increased," is not more manifest in our steaming it over the earth and the ocean with gigantic strides, or conversing at vast distances with the speed and by the power of lightning, than in the railway pace of chemical discovery in the organic world, where myriads of new views and new objects are daily being brought to light by the indefatigable genius of highly-gifted minds in many lands, especially in Germany and France. These spirits of marvellous powers and forms, have been evoked in such rapid succession from the bosom of animated nature, as quite to bewilder the common mind, and call for a genius of the highest rank to marshal them in due order and subordination, according to their qualities and relationships. This very delicate and difficult task has been most auspiciously undertaken and accomplished, in a truly philosophic spirit, beyond our most sanguine expectations, by the veteran Chemist, Privy Counsellor Leopold Gmelin, in the work before us.

He begins his comprehensive career of research with some interesting generalizations. He shows that carbon is the only indispensable element of animal and vegetable being; each of the other elements may in its turn be wanting, but carbon can never be absent; and of it always more than one atom is required. Hydrogen exists in most organic compounds, and, along with carbon, it forms many of the most important of them, entering in the proportion of from one-third of an atom, to two atoms at most for one of carbon, into combinations.

No organic substance consists of merely carbon and oxygen. Azote with carbon constitutes a few of these compounds, such as cyanogen and mellon: others include also hydrogen, as nicotin; some again have sulphur in addition, as oil of mustard; and a great many comprise carbon, hydrogen, oxygen, and azote, as the crystalline alkaloids, *e. g.* narcotine, and animal matter, *e. g.* proteine. A few consist of carbon and chlorine, but more of them contain either chlorine, bromine, or iodine along with other elements, besides carbon, in generating organic compounds. Such may consist of from two to six elements; while the number of the *atoms* of carbon and hydrogen may amount in a simple combination to about seventy; that of oxygen, however, to no more than twenty-eight; of atoms of other bodies, to from one to six.

Almost all organic bodies contain an even number of carbonic atoms, as 2, 4, 6, 8, up to 68; only a few* contain odd numbers, as croconic acid, gallic acid, &c. Gerhardt has, with much plausibility, sought to remove this anomaly by doubling the number of atoms in the latter compounds; by which means he converts one basic acid into two basic, and two basic into four basic, and thereby produces an accordance with their known relations to the salifiable bases. All the hydro-carbons possess an even number of hydrogen atoms, which is also the case with the chloro-carbons. From such data, Laurent and Gerhardt have concluded, that when one atom of the compound body in the state of vapour assumes or constitutes four volumes, then we can divide by the number 2.

1. The number of atoms of carbon present.

2. The number of atoms of hydrogen, chlorine, iodine, bromine, azote, and metal; and,

3. The *sum* of the atoms of oxygen, sulphur, selenium, tellurium.

By this statement of the general law, says Gmelin, many exceptions to it disappear.

Concerning the mode of combination in organic bodies, two theories claim especial consideration.

1. The radical or binary theory of Berzelius.

2. The type or substitution theory of Dumas, Laurent, and Gerhardt.

The ultimate analysis of organic compounds presents merely the *crude* chemical formula, expressing simply the number of atoms of the constituents; as for example, acetic acid, or radical vinegar, contains four atoms of carbon, four of hydrogen, and four of oxygen, in symbols $C_4 H_4 O_4$; but this statement does not indicate in what manner these twelve atoms are associated. This knowledge constitutes the *rational* formula. Now, since the atoms are invisible, a direct acquaintance with their mutual collocations is unattainable, and can be hypothetically approximated to with greater or less probability only by studying the manner of formation and decomposition of acetic acid, and of its compounds with other organic bodies. The rational formula of the radical theory is for acetic acid, $C_4 H_3+O+H O$, that is acetyloxide + water, in which compound acetyl $= C_4 H_3$ represents the radical. But the nucleus or type theory gives us here for a rational formula either $C_4 H_4 + O_4$; that is æthen (olefiant gas) + four atoms of oxygen, in which æthen is the nucleus; or it may give us $C_4 H_3 O, H O_3$ = dry acetic acid + one atom of water, or acetyl with three atoms of oxygen and one of water.

Most Chemists favour the radical theory, as propounded by

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* Here in the German, *Keine* is misprinted for *Eine*; and *paare* for *unpaare*.

Berzelius; even Liebig has adopted it in his works, with some modifications, but he allows of the replacement of hydrogen by chlorine, thus far departing from the electro-chemical principles of Berzelius. Radicals are organic compounds which possess the properties of elementary bodies. Several of them play like parts to chlorine and oxygen—as cyanogen, others as metals; such are ethyl and benzoyl. In mineral chemistry, radicals are simple bodies; in organic chemistry they are all compounds. Gmelin advances several plausible objections to the theory of radicals; see pp. 11-14 of his Handbuch.

He prefers the *nucleus* theory of Laurent and Gerhardt, which may be regarded as related to the *substitution* and *type* theory of Dumas.

One constituent of an organic combination may be withdrawn from it, without being replaced by another, whereby the body passes into another type. In most cases, however, the removed constituent is replaced by a like number of atoms of the displacing agent, and this constitutes substitution. Not only can hydrogen be thus replaced, but also oxygen, azote, and all the other constituents—even possibly carbon, though of the latter change there are strong doubts. *Replacement is commonly by a like number of atoms.*

Types.—Combinations which contain a like number of atoms (equivalents of Dumas) united in like reciprocal positions, and which possess like fundamental properties, belong to the same *chemical type*. The combinations belonging to the same type show, by agreeing in like leading properties, that in their decompositions they will afford analogous products. The types of Dumas form the members of which every series of Laurent's nucleus theory consists; according to which, the atoms of organic compounds are partly fundamental *nuclei*, partly combinations of *nuclei*, with different substances attached externally to the *nuclei*. The *nuclei* are associations (assemblages) into mathematical figures of atoms of carbon, with atoms of some other elements, in a number and order definite for each kind of nucleus. The number of carbon atoms is some even one, as also the number of the other atoms, and the total number of atoms in the nucleus; thus, 2 atoms of carbon may go to 2 of the other body, 4 to 4, 8 to 8, 32 to 32, 6 to 4, 12 to 8, 14 to 6, 18 to 8, &c.

If the nuclei contain along with carbon merely hydrogen, they are called *fundamental* nuclei; but if one, or several, or all the hydrogen atoms of the nucleus are replaced by other elements, and certain inorganic and organic combinations, which take exactly a like position in the nucleus, as the hydrogen atoms did in the primitive or fundamental nucleus, they are in this case called *derivative* nuclei. In this system much less depends upon the *nature* of the elements, and much more upon the mutual *collocation* of their atoms than in the radical theory. The elements which most usually replace the hydrogen atoms in the nucleus, are iodine, bromine, chlorine, oxygen, azote, and metals. One atom of hydrogen may be replaced by one atom of chlorine, or of an organic compound, however much heavier it may be. The termination *se*, denotes a derivative nucleus; the vowel placed before *se* denotes the number of atoms of hydrogen, that have been replaced by another substance. If one atom of hydrogen has been replaced, the word ends in *ase;* if two, it ends in *ese;* if three, in *ise;* if four, in *ose;* if five, in *use;* if six, in *alase;* if seven, in *alese;* if eight, in *alise.* If the replacing element is not named the silent *o* is put under it. When another element replaces the hydrogen (H), its name is prefixed. Thus, *e. g.*, with chlorethase æthen, in which one atom H is replaced by one atom Cl; and with chlorethose, all the four atoms of H are replaced by four of chlorine.

The following cases illustrate these principles:—In the naphthen series, we have naphthaline=naphthen=$C_{20}\ H_8$=the fundamental or primitive nucleus. Of the thirty-three derivative *nuclei*, the following are a few:—Naphthase=$C_{20}\ H_7\ O$; chlonaphthase=$C_{20}\ H_7\ Cl$; ninanaphthase=$C_{20}\ H_7\ X$*; amanaphthase=$C_{20}\ H_7\ Ad$†; bronaphthese=$C_{20}\ H_6\ Br_2$; chloranaphthese =$C_{20}\ H_6\ O\ Cl$; chlonaphthise=$C_{20}\ H_5\ Cl_3$; aminaphthise= $C_{20}\ H_5\ Ad_3$; bronapthose=$C_{20}\ H_4\ Br_4$; chlorenapthose=$C_{20}\ H_4\ Cl_2\ O_2$; chlorebronaphthose=$C_{20}\ H_4\ Br\ Cl_3$; chloreninaphthose =$C_{20}\ H_4\ X\ Cl_3$; chloribronaphthuse=$C_{20}\ H_3\ Br_2\ Cl_3$; chlonaphthalase=$C_{20}\ H_2\ Cl_6$; chloroxenaphthalese=$C_{20}\ H\ Cl_5\ O_2$; chlonaphthalise=$C_{20}\ Cl_8$.

All these derivative nuclei belong to the series of the primitive nuclei. They have all the same type, for there is in them all the same number of atoms of carbon, with the same number of other atoms associated in a similar manner, and in a like mathematical figure.

The atoms of different elements frequently attach themselves exteriorly to the nuclei, whence proceed several new types belonging to the same series, according to the *nature* and the *number* of these exteriorly applied atoms. Their number is usually the pairs, two, four, or six.

It appears that Gerhardt has been associated in most of these labours with his friend Laurent, and has besides contributed a very important modification of the doctrines of chemical equivalents, which Gmelin has introduced as a necessary member of the nucleus theory. The weights of the atoms, and of the equivalents of the elements and their combinations, were, prior to Gerhardt's development of organic chemistry, incorrectly established, because the relations of the volumes of the elements and of their compounds in the state of elastic fluidity were not adequately considered. In general, Gerhardt shows that many of our present atomic weights are too great by one-half. By leaving the equivalents of O, C, S, and Se, as they are usually given, and halving those of H, J, Br, Cl. F, N, and the metals, or by doubling the former and leaving the latter unchanged, we shall obtain pretty nearly the equivalents of Gerhardt, adapted to Laurent's, and his new views of organic combination. For example, that eighteen for water, twenty-eight for carbonic oxide, and eighty for sulphuric acid, are the true atomic weights, and not nine, fourteen, and forty, as hitherto assumed, appears from the facts adduced by Gerhardt, that in the decomposition of organic compounds there is never one of our atoms (9 of water, 14 carbonic oxide, and 22 carbonic acid) disengaged, but always two of water = one atom of Gerhardt, or a simple multiple of eighteen. Moreover, when organic compounds assume water, sulphur, or sulphuric acid, never less than the double weight of one of our atoms is combined, with one of the compound, but two = one atom according to Gerhardt, or a simple multiple thereof. Thus, oxalic acid with ammonia forms oxamid, with the extrusion of two of our atoms of water=eighteen (but one of Gerhardt) = in symbols $C_2\ H\ O_4 + N\ H_3 = C_2\ H_2\ N\ O_2 + 2\ H\ O$. Peppermint camphor is transformed by heat, in contact of dry phosphoric acid, into Menthen $= C_{20}\ H_{18}$, and $2\ H\ O$, = two of our atoms of water, &c. Inversely, common camphor $= C_{20}\ H_{16}\ O_2$, passes by reception of $2\ H\ O$, = eighteen water, into campholic acid $= C_{20}\ H_{18}\ O_4$; thus also, lactic $= C_6\ H_4\ O_4$, by reception of $2\ H\ O$ into lactic acid $= C_6\ H_6\ O_6$. Benzoic acid, $C_{14}\ H_6\ O_4$ distilled with lime in excess, affords benzol, $C_{12}\ H_6$ the $2\ C\ O_2$ remaining in the lime; and so in a great many cases of decomposition, in which always two, not one atom of our $C\ O_2$ are concerned.

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* X is substituted out of brevity for NO_4. † Ad for Amid.

We shall not detail Laurent's new classification of organic compounds into the different series, under his six heads of *primitive* nuclei, *protogenides*, *monobasic* salts, *bibasic* salts, *prometallides*, and *syndesmides;* but merely state, that the judicious and candid Gmelin says, "Whoever will subject his system to examination, though he may not agree with him in every particular, will yet allow that the nucleus theory affords the most comprehensive and the simplest view of the many thousand known organic combinations, and associates them in the most natural families or series." We regret that our limits do not permit us to lay before our readers the professor's conjectures, as he modestly styles them, concerning the mutual position of the elementary atoms, in the combined atom of an organic compound, under the conditions of the nucleus theory, as given in pages 27—33 of his *Manual.*

He next proceeds, in the second section, to investigate the formation of organic bodies; 1. from inorganic materials, and 2. from other organic combinations.

In his third section, he considers the general properties of organic compounds; as 1, to their state of aggregation; 2, their specific gravity in their natural and also elastic condition; their boiling points, their relations to light, as their colours, refracting powers, circular polarization, their isomerism, polymerism, and metamerism.

His fourth section, which is occupied with the decompositions and transformations of organic compounds, is replete with profound and most interesting views. Substitution, metalepsy, or replacement, is the first subdivision, under which the most remarkable cases are passed in review. He next treats of decompositions by heat, 1, by the dry distillation practised rudely by the older Chemists; 2, by ignition in close vessels; 3, by combustion in the air; 4, by spontaneous dissolution or decay (*verwesung*) by fermentation, of which he gives a most luminous theory, founded on, and illustrated by, a curious collection of facts. Decomposition leads him to describe the various means of counteracting it, or the preservation of organic matters.

The first *lieferung* of the first volume of organic chemistry, containing 128 pages of condensed and elaborate letter-press, concludes with most instructive details of the decomposition of organic matter by the action of chlorine, iodine, bromine, nitric acid, the acids of chlorine, sulphuric acid, the acids of phosphorus and by alkali. We are fully persuaded that no such philosophical digest of chemical science, in its most intricate and interesting department, has ever before been presented to the world. It is, in fact, one of the noblest monuments of industry, sagacity, and candour, ever produced by one mind. By completing his *Handbuch* in the same admirable manner, the amiable and accomplished author will earn the lasting gratitude of every student and lover of Chemistry.

On surveying the preceding portions of this great chemical treasury, Baron Liebig was induced to address the publisher in the following eulogistic and well merited language: "The industry, the conscientiousness, the carefulness (*sorgfalt*), and patience of the author, excite the utmost astonishment. I do not believe that any other nation can exhibit a work which can be placed on a par with Gmelin's, or a man who combines such a vast compass of knowledge with the spirit and the power to execute so colossal a labour." What will the celebrated Chemist of Giessen think or say of Gmelin's conscientious adoption and development of the new system of chemical philosophy of

Laurent and Gerhardt—men whom Liebig denounced and vilified, not long ago, as equally devoid of moral probity and scientific truth? See vol. v., p. 456 of this Journal, or the *Annalen der Pharmacie und Chemie*, by Woehler and Liebig, for January, 1846.

THE CAVENDISH SOCIETY.

We take this opportunity of reminding our readers that *Gmelin's Chemistry* is one of the works on the list proposed to be translated and published by the Cavendish Society. A work of this magnitude could not be undertaken without the support of a numerous list of subscribers, and we mention this fact as a stimulus to our readers to join the Cavendish Society.

THE ROYAL COLLEGE OF CHEMISTRY AND THE CHEMICAL SOCIETY.

A report has recently been circulated to the effect that it is in contemplation to hold the meetings of the Chemical Society at the house of the College of Chemistry, and to amalgamate the two institutions into one. This statement is without foundation, for although the proposition was made, it was immediately negatived by both parties.

TO CORRESPONDENTS.

G.—The formula for *green ink* in the last number of this journal yields a good green ink when correctly and carefully prepared.

A. B. C.—Lead may be precipitated from cider by sulphuretted hydrogen, as a black powder, or by sulphuric acid as a white powder.

A. P. S., G. B.—(1.) The best source for sulphuretted hydrogen is *sulphuret of iron* and *diluted sulphuric acid*.—(2.) For the means of detecting adulterations in scammony, see Dr. Pereira's *Materia Medica*, which is in the library of the Society at Bloomsbury Square.

A. E.—There is no authorized formula for *Pulvis Guaiaci Compositus* in this country. If this term should be met with in a prescription written in England, it would be incorrect to follow either of the formulæ given in Beasley's *Pocket Formulary*, as they are taken from foreign works. *Pulvis Aloes Compositus* is most likely meant, but application should be made to the prescriber.

Alfred (Hammersmith).—There is an acknowledged formula for Scheele's prussic acid, which was originally given by Scheele, but as it directs the acid to be made from *Prussian blue*, which varies very much in composition, the strength of the acid made according to this formula is not definite. It is generally estimated to contain five per cent. of real acid (some authorities say four), and is therefore about double the strength of that ordered in the London Pharmacopœia, which contains two per cent.

W. O. C.—The English translation of Müller's *Physics*, is now publishing in one small volume by Balliere, of Regent Street.

A Junior, (Edward Street).—(1.) Valerianic acid is separated from valerianate of soda by adding diluted sulphuric acid and distilling.—(2.) Fownes's *Manual of Chemistry*.

R. S.—(1.) Yes.—(2.) The formula for *Solution of Muriate of Morphia*, in the *Edinburgh Pharmacopœia*, is about the strength of laudanum.—(3.) The term *Unguentum*, pronounced *Anguentum*, is applied by the lower classes to designate *Ung. Album Camphoratum*.

"BURGH."—The *stronger solution of ammonia* is ordered to be used in the *Tinctura Ammoniæ Composita*. There is no formula for this solution of ammonia in the Pharmacopœia, but its composition and strength are defined in the Materia Medica and notes.

W. H.—When sulphate of quinine is ordered in a prescription, the disulphate of the London Pharmacopœia should be used. Chemists are not unanimous in calling it a disulphate. It is called a sulphate in the Edinburgh and Dublin Pharmacopœias.

T. C. G. H. S. M.—There are several formulæ for hair dyes in the new edition of Gray's *Supplement*.

A SUBSCRIBER.—Ol. Jecoris Aselli. Cod liver oil is prepared for medicinal use in this country from the fresh livers of cod, generally by boiling or expression. In colour it resembles oil of sweet almonds, and the smell is like that of the fish when recently boiled. It is very scarce at present. An oil is imported into this country from abroad in large quantities under the name of cod liver oil. It is sold at a very cheap rate, and is very much like train oil. Those who can swallow it must have stomachs like Laplanders, who are proverbially fond of train oil.

Ax., M.P.S.—(1.) Fownes's *Manual of Chemistry*, price 12*s*.—(2.) Cyanide of potassium, see vol. ii., p. 88-573.

E. L., M.D.—An answer was sent to the post office alluded to.

"CHEMICUS, M.P.S."—The new edition of Gray's *Supplement* contains the formulæ required.

L. U. X. has sent us a sample of spurious extract of chamomile.

O. P. Q. cautions the trade respecting a hawker of Eau de Cologne, which he offers as genuine, but which is an imitation. Chemists should be cautious in purchasing any article when offered in that way.

A. P. S.—There is no royal road to a knowledge of Latin.

M. P. S.—The portrait of the late President was engraved and published at a moderate price, with the expectation that the proceeds would have been sufficient to purchase the picture for the Society, pay the expenses of the plate, and leave a balance which, it was stated, should be given to the Benevolent Fund. One thousand prints at 5*s*., or half the number of proofs at 10*s*. 6*d*., would have been a very successful subscription. But the actual number on the list was about twenty-five (proofs and prints), and the proceeds under £10. Consequently the project failed, and the loss on the engraving amounted to above £70. M. P. S. should forward his name.

Communications have been received from H. C. R., Mr. Edwards, Mr. Lamplough, Mr. Badcock, M. P. S., and Mr. Dunlop.

Dr. Robertson's Treatise next month.

ERRATA.

In page 477, line 15 from bottom, *for* other kingdoms, *read* these kingdoms.

In same page, 13 from bottom, *for* their differences, *read* these differences.

In page 478, 24 lines from top, *for* first solution, *read* test solution.

In pages 483 and 484, transpose the terms *atomic weights* and *equivalents*, forming the headings to the tables of atomic numbers. *For* At, *read* Al.

Advertisements to Mr. CHURCHILL, Princes Street, Soho.

Instructions from Members and Associates, respecting the transmission of the Journal, to Mr. SMITH, 17, Bloomsbury Square, before the 20th of the month.

Other Communications to the EDITOR, 338, Oxford Street, (before the 20th of the month, if answers be desired in the ensuing number).

THE PHARMACEUTICAL JOURNAL.

VOL. VI.—No. XII.—JUNE 1st, 1847.

THE MEDICAL REGISTRATION BILL.

NOTWITHSTANDING the difference of opinion which exists in the Profession, on the subject of Medical Reform, we have heard no one express any objection to the principle of Medical Registration. The general desire seems to be in favour of a measure,

> "The simple and honest intention of which is to draw a line of circumvallation around all regularly educated and qualified men—a line over which no unqualified person should dare to pass without incurring pains and penalties."—(*Lancet* for May 8th, p. 494.)

We feel persuaded that a Bill having this for its object, and nothing more, could be passed with the greatest facility, and that this would be the first step towards the attainment of the grand object in view, namely, the protection of the profession and the public against the baneful impositions of quacks.

Although numerous petitions have been presented in favour of the Medical Registration Bill now before the House of Commons, it has been opposed by the Colleges of Physicians and Surgeons, the Society of Apothecaries, and the National Institute of General Practitioners; not in its character as a Registration Bill, but because it also interferes with qualification, and repeals powers previously enjoyed by the several medical bodies under existing Acts and Charters.

The objections which had been raised against the adoption of one register for the whole profession, instead of a separate register for each class, are ably answered by the author of the Bill in the *Lancet* of May 8th. He observes,

> "Either a man is a member of the profession or he is not: if the former, whatever his rank or degree, there must be some common ground upon which he stands, and upon which the highest dignitaries of the profession, if there are such, must also have their foundation. Such a foundation—such a common ground—we conceive a system of registration to be. It must fairly be granted that the junior licentiate of the Apothecaries' Society is a medical man: it may be said of the President of the College of Physicians that he too is a medical man—a 'Medical Practitioner;' and this is the common title which belongs to both."

With reference to the classification of grades in the register, the author inquires,

> "Would you have Physicians, Surgeons, and Apothecaries, registered according to their titles? Let us see how the matter would stand. Graduates of the Universities of Oxford, Cambridge, Dublin, and London, and Fellows of the College of Physicians, would be placed cheek by jowl with men from St. Andrews, and Aberdeen, and Glasgow, bearing much the same titles and designations."
>
> "To say that formal classes must be preserved in a system of registration,

is equivalent to saying that no registration whatever shall exist; for angels, much less men, could hardly settle the order and precedence of the various bodies and titles, licences and degrees, that would come up to the surface at the bidding of a class registry."

These observations forcibly point out the fact, that a system of registration, if an attempt at classification were made, would be either inconsistent in itself, or so complicated as to defeat its own object. It must, therefore, be acknowledged that, provided nothing more than registration is contemplated, and the rank and titles of each individual are clearly stated in the list, as well as in the certificate of registration, the arguments in favour of a general register preponderate. Up to this point we think all difficulties might be overcome, and the clause or clauses prohibiting unregistered persons from acting in any manner as Medical Practitioners would complete "the line of circumvallation around all regularly educated and qualified men."

But the Medical Registration Bill goes rather further. The 9th clause provides,

> "That so much of any Act or Charter granted before the passing of this Act, as prohibits any person from practising medicine, physic, or surgery, in any place, without such licence as is mentioned in any such Act or Charter respectively, or that imposes any restriction or penalty on the practice of medicine, physic, or surgery, further than is contained in this Act, shall be, and the same is hereby repealed and annulled."

This is a sweeping clause, and the medical bodies who enjoy powers under their respective acts or charters, consider it an invasion of their rights. We attribute all the opposition which has been raised against the Bill to the fact that registration, instead of being made a "bond of union" between all classes, leaving the members of each in possession of the rank and legal qualification which they previously enjoyed, and no more, confers a new qualification, which, to a certain extent, neutralizes previously existing distinctions. This collision of interests is much to be regretted. If the contest were, *the whole medical profession* versus *the quacks*, a victory could be obtained with the greatest ease; but so long as it continues to be *the several classes in the profession* versus *each other*, the quacks must inevitably triumph and reap the spoil.

A select Committee of the House of Commons having been appointed to consider the Medical Registration Bill, we hope some mutual concessions will be made for the purpose of effecting, if possible, an arrangement satisfactory to all parties.

Unless this should be effected on the present occasion, we fear the medical profession will remain *in statu quo*. It is not likely that any Minister of State, or Member of Parliament, will again embark in so hopeless an undertaking, unless the members of the profession will attend to the old proverb, that "in the settlement of differences an ounce of oil will go further than a gallon of vinegar."

THE APPEAL TO PARLIAMENT

IN FAVOUR OF A

BILL FOR REGULATING THE QUALIFICATION OF CHEMISTS AND DRUGGISTS.

Under ordinary circumstances petitions presented to Parliament have reference to some specific Bill before the House; but in the present case it was considered advisable to deviate from the usual course by presenting petitions before the introduction of the Bill. The chief obstacle to be overcome was the prejudice against embarking in any measure interfering with Chemists and Druggists; for although all parties with whom the Council have conferred, including Secretaries of State and Members of Parliament, have concurred in the opinion that such a Bill was much required, yet all appeared to shrink from the responsibility of embroiling themselves in the imaginary difficulties supposed to be inseparable from the undertaking. It was therefore necessary at the present crisis to make a demonstration of unanimity in Parliament, in order to establish the fact, that THE CHEMISTS OF THIS COUNTRY ARE NOT, AS FORMERLY, A DISUNITED BODY, opposed to every kind of reform; but that they have been for several years steadily co-operating in the endeavour to advance their professional qualification, and to pave the way for the introduction of a Bill which they are now prepared unanimously to support.

As corroborative evidence of the comparative facility with which such a measure might now be carried, petitions have been submitted for signature to members of the Medical Profession, and other petitions to the public at large. The result is highly satisfactory.

The London medical petitions are signed by the most distinguished Members of the Profession, including the President, Censors, and Consiliarii of the College of Physicians, and the President and Council of the College of Surgeons. We have also the satisfaction of stating, that the petitions were not signed merely as a matter of form, but in most cases with a cordial expression of approval of the undertaking, and wishes for its success.

A considerable number of General Practitioners have also signed petitions, and several of the leading members of that body have signified their entire concurrence in the general principles of the draft of a Bill which had been submitted to them.

The petitions from the public at large are equally favourable. In those streets which have been canvassed, nearly all the inhabitants (excepting those who were not at home when called on) very readily signed the petitions, and fully recognized the importance of the object.

In the country many of our local Secretaries have exerted themselves zealously in the cause, and a very general expression of opinion in favour of the Bill has been the result. Numerous petitions of each class—namely, from Chemists, Medical Practitioners, and the public—have been forwarded to the house of the Society in London, and presented to Parliament; others have been sent to the Members by their respective constituents in the country. Among the signatures we have the names of nearly all the Chemists and Medical Practitioners of the several localities, as well as the mayors, justices of the peace, magistrates, rectors, lawyers, and other influential inhabitants, including some members of parliament. Many of the petitions are numerously signed, some of them containing from a hundred to upwards of four hundred signatures. If any further evidence were needed, the House of Commons might be inundated with petitions from all quarters; since it is only requisite to send a petition systematically into any street in order to obtain the signatures of nearly all the inhabitants. This is attended with much labour and a great sacrifice of time, and we trust that it will be superfluous to proceed any further in so arduous a task.

We feel persuaded that the demonstration already made will be found sufficient to convince the Secretary of State and the House of Commons that the Chemists, the Medical Profession, and the public, are prepared to support a Bill for regulating the qualification of Chemists and Druggists.

As this is a question relating to the Public Health, it has been the object of the Council to recommend it to the notice of the Government, instead of attempting to introduce a private Bill; and they have promoted an appeal to Parliament at the present time, in the hope that the Secretary of State for the Home Department will yield to the demonstration by undertaking to bring the Bill into the House.

At a meeting of the Council on the 24th of May, some of the suggestions which had been made in reference to the draft of a Bill, were discussed, and the following alterations were agreed upon:—

In clause 2, line 2, after the word "Members," insert "or

Associates;" line 11, after the words "or Chemist and Druggist," insert "and dispense the prescriptions of Medical Practitioners."

After clause 12 insert the following:—

13th Clause.

"And be it enacted, That every person who shall be registered as a Pharmaceutical Chemist and Druggist under this Act, shall be exempt, if he shall so desire, from serving on all juries and inquests whatsoever, and from serving on all corporate, parochial, ward, hundred, and township offices, and in the Militia."

THE APPROACHING GENERAL ELECTION.

Although we have no wish to urge the Members of our body to interfere unnecessarily in political matters, it is quite legitimate and proper for each class in the community to take advantage of a general election for obtaining influence in the House of Commons. Nor do we advocate the custom of requiring "pledges" from candidates on the hustings, since a representative thus fettered becomes a machine, and debates in the House are a mockery, if each Member takes his seat pledged beforehand to vote in a particular way.

But it must be admitted, that when a candidate is appealing to his constituents for their support, he is more open to conviction than usual, and arguments properly advanced at that time are likely to make an impression.

However insignificant and trivial the claims of any class in the community may appear, it must be remembered that the community consists of numerous classes, and that each is entitled to the protection of the Government, in the support of which all are called upon to contribute. In the case of the dispensers of medicine, the welfare of the public generally, as well as that of the particular class, is concerned in the introduction of a law for regulating pharmaceutical education; and our Members should avail themselves of the opportunity of stating this fact when called upon for their votes.

Another motive also should actuate electors in their conduct at a general election; namely, gratitude for past services. On several recent occasions it has been necessary to apply to Members of Parliament for protection against threatened inflictions on Chemists and Druggists, in the form of Excise or other Bills, which have been introduced into the House; and we have reason to be grateful for the prompt and efficient manner in which many of our representatives have performed their duty and thus averted the evil. We hope our local secretaries will not forget the claims of those Members of Parliament who, on these occasions, responded to the appeal of their constituents. Every Member who thus exerted his influence, is entited to the votes and support of the Chemists in his borough or county. Without reference to the political parties, Whig, Tory, and Radical (now, fortunately, almost obsolete) a tried friend is more to be depended on than a stranger, whose claims for support rest on the baseless fabric of fair words or "pledges."

THE NEW INTERPRETATION OF THE APOTHECARIES' ACT.

The recent convictions on the charge of misdemeanor under the Apothecaries' Act (reported page 598) establish the fact that the Society of Apothecaries possesses powers not contemplated at the time the Act was passed. This legal discovery is a very important one to the interests of the profession, and its value will depend upon the manner in which the new powers are exercised. If the Society should direct its attention to the prosecution of those designing imposters who, by indecent advertisements and other dishonest means, entrap the unwary, much benefit will be conferred on the profession and the public. This task would be sufficiently extensive to occupy the Society for several years, during which time the sympathies of all honest men would be enlisted in favour of a body thus devoted to the suppression of the most flagrant species of quackery.

The powers of the Society, however, are not confined to the conviction of ignorant and designing quacks, but extend to all persons, whether qualified or not, who practise as Apothecaries without possessing a licence under the Act of 1815. Prosecutions against qualified Medical Practitioners on the technical ground of their not possessing this licence, would reflect discredit and consequent injury on the Society.

We take this opportunity of cautioning the Members of our body with regard to the responsibility which they would incur by visiting patients as Apothecaries, and thus becoming liable to prosecutions under the new version of the Act.

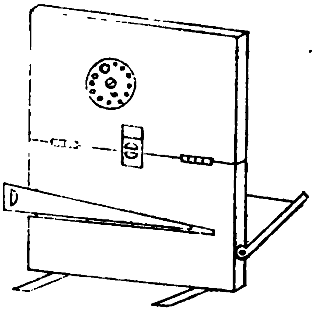
TRANSACTIONS
OF
THE PHARMACEUTICAL SOCIETY.

ABSTRACT OF A LECTURE
ON THE USE OF THE GONIOMETER.

BY C. BROOKE, ESQ., M. B., F. R. S.

The general principles of Crystallography having been developed in the two former lectures, the object of the present is to explain their practical application to the determination of the form of a crystal.

The construction and mode of using Wollaston's goniometer having been fully described in the *Familiar Introduction to Crystallography*, our readers are referred to that work; but a more convenient method of arranging the signals may here be described. In the ordinary mode of observing, a dark line, seen by reflection from the face of the crystal, is made to coincide with another line seen directly; as, for instance, a bar of a window, with a line in the skirting-board beneath: but when, as is frequently the case, the surface of the crystal affords a very imperfect reflection, a point of light on a dark ground will be more readily discerned than a dark line on a light ground; and there is much less uncertainty in bisecting a diffused spot of light by a bright line than in obtaining the coincidence of two dark ones. For this purpose two small boards are united by hinges, so as to occupy, when folded together, the bulk of an ordinary octavo volume, for the sake of portability. When opened they stand edgewise on two folding feet, and are kept open by a bolt, as may be seen by the annexed diagram; there is a hole in the centre of the upper one, in front of which is placed a revolving disc, with a series of holes from 0.02 to 0.2 inches in diameter, any one of which may be made to coincide with the aperture in the board. In the middle of the lower board is a slit, the width of which may be adjusted by a sliding wedge. A piece of card-board is placed behind this slit, resting on two arms which open out from the edge of the board. A lamp is placed behind the



upper opening, the light of which, reflected from the card, illuminates the slit. A small plane mirror is attached to the stand of the goniometer, and so placed that while the point of light is seen by reflection from the face of the crystal, the line of light is seen by reflection from the mirror; and the crystal being adjusted as described in the work referred to, the bright line is made to bisect the image of the luminous point.

In by far the greater number of crystals, a careful examination of the apparent symmetry of the secondary planes will lead to a correct estimate of the primary form. It is then desirable to make a rough plan of the terminal aspect of the crystal, and mark all that appear to be pairs of planes with the same letters, one of each being accented. Measurements should now be taken over the several edges of combination, and to ensure the requisite degree of accuracy, the measurements should be repeated several times, both on the same and on different crystals. In order to arrive at the greatest degree of accuracy in determining the various inclinations, it is necessary to multiply each measurement by its *weight*, or probability of correctness estimated from the apparent perfection of the planes, and to take a mean of the sum.

It is always desirable to ascertain what planes lie in the same zone, that is, have their edges of combination parallel. This may be done by turning the crystal round on the axis of the instrument, after the measurement has been made, and observing if a similar coincidence of the signals can be obtained from any other surfaces.

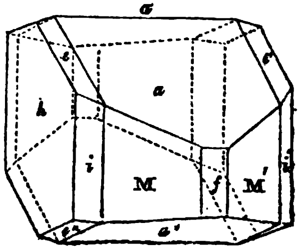
The lecture was illustrated by an examination and rough sketch of the hitherto undescribed crystals of Asparagine and Codeia, from the laboratory of Mr. Morson, the forms and measurements of which have been recently determined by Mr. C. Brooke, and are as follows:—

Asparagine.—The form of this substance, an organic principle obtained from the Asparagus, &c., is a right rhombic prism, in which the relation of the terminal to the lateral edge is

B : H :: 2 : 1

The measurements are

M on M'	117°	38'
M " *a*	111	32
M " *i*	161	22
M " *h*	121	8
a " *a'*	129	18
a " *h*	90	0
e " *h*	117	18
f " *h*	90	0



Which give the symbols of the planes

$$\begin{array}{cccccc} M & a & e & f & h & i \\ & \overset{2}{A} & \overset{1}{B} & \overset{1}{H} & \overset{1}{G} & \overset{3}{G} \end{array}$$

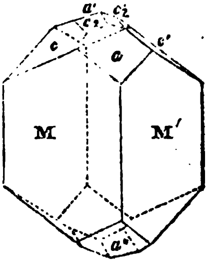
The letters used are the same as in Art. Crystallography in the *Encyclopædia Metropolitana.* The alternate planes *e* are usually omitted on the summit of the crystal; *f* rarely occurs; and sometimes *h* is obliterated by the development of M and ||M′, the narrow planes *i* then meeting at an edge.

Codeia.—The primary form of this substance is a right rhombic prism; the crystals are generally elongated in the direction of the axis.

M	on	M′	92°	40′
M	"	*a*	119	17
M	"	*c*	116	4
c	"	*c′*	101	17
c_2	"	c_2'	133	10

B : H :: 10 : 9

$$\begin{array}{cccc} M & a & c & c_2 \\ & \overset{1}{A} & \overset{1}{E} & \overset{2}{E} \end{array}$$



SIXTH ANNIVERSARY

OF

THE PHARMACEUTICAL SOCIETY,

Held at 17, *Bloomsbury Square, May* 18*th*, 1847.

Mr. John Savory, President, in the Chair.

The President opened the meeting with the following Address:—

In an Association, such as I have at present the honour of presiding at, composed of upwards of three thousand Members and Associates, who have united together with the view of promoting the advancement of the science of Chemistry and Pharmacy, and of placing the Chemists and Druggists of this country on a level with those of our continental neighbours, thus indirectly tending to improve the arts and sciences, the manufactures, the cultivation of the soil, and the health of mankind, I should not consider that I efficiently performed my duty as Chairman, were I not to follow the custom of other societies in addressing my Brother Members on the occurrence and celebration of this our Anniversary. It is now but six short years since a few of us met at each others houses, and conferring as to the best means of promoting the improvement and advancement of English Pharmacy, we of course saw that it could only be effected through *Education*,

> "That goodly discipline! from Heaven sprung;
> Parent of Science, Queen of Arts refined!"

Addresses were put forth, both in London and the country, in favour of the objects thus contemplated, and those who delighted in the study which they professed, eager to elevate it, hastened to enrol their names, and devote their time and energies in suggesting and carrying out those plans which have since been so happily effected. The formation of this Society was one of the first steps adopted. The first Annual Meeting of the Society was held on the 17th May, 1842, at the Crown and Anchor Tavern, upon which occasion our highly-distinguished and deeply-lamented friend William Allen presided. He has since, by the unsparing hand of death been gathered to his fathers,—a loss to this Society, a loss to science, and to mankind in general. He was a philosopher and philanthropist; his presence animated and his counsels assisted the promoters of this yet imperfectly formed institution, in the success of which he took a deep interest. Much, Gentlemen, as we may feel his loss, in the words of Young,—

> "It were profane
> To quench a glory lighted at the skies,
> And cast in shadows his illustrious close."

At this Meeting it was publicly announced that Apprentices and Assistants should be examined as to their proficiency, and certificates granted according to their competency. Professors were appointed to deliver courses of lectures on Medical Botany and Materia Medica, on Chemistry and Pharmacy. In addition to this, the nucleus of a Library and Museum was formed, Evening Meetings were appointed for the reading of papers and for scientific discussions, affording an opportunity for communication between the Provincial and London Members.

At the same time that these arrangements were made for the rising and prosperous members of our body, the cheering hand was not forgotten to be extended to those upon whom fortune had not so propitiously smiled. As a commencement, the sum of £500 was voted towards a Benevolent Fund, the Society having for its object, to use the words of Mr. John Bell, the public proposer of this resolution, "not only the advancement and present benefit of its Members, but also the provision against the contingencies incidental to humanity—sickness and misfortune."

I feel it to be my duty, Gentlemen, although I confess it is one which I approach with some misgivings of my power to do full justice to the importance of the subject, to direct your particular attention to the present condition of our Benevolent Fund. You will perceive from the Report which our Secretary will read, that the subscriptions and donations received on account of this fund last year, together with the interest on capital, amount to only £188. 1*s.* 4*d.* Now the objects contemplated in the establishment of this fund are good and important; but it has not yet been brought to such a state of maturity as to admit of our commencing the diffusion of its benefits. The completion of the object can only be accomplished by union, diligence, and perseverance. In commencing this fund, you have admitted and sanctioned the principle—will you then stop at the threshold? Look around at the charitable and benevolent institutions of this country—the asylums for the aged and distressed, both civil and military! Pass the palace of Greenwich, or the college of Chelsea, and reflect on the contentment and happiness administered to thousands by the fostering care of a paternal government. Among the members of most trades and professions similar provisions are made. Why, then, should the Chemist and Druggist shrink from completing the establishment of this humane and charitable feature in our Society, which is intended, not only for the relief of our distressed and unfortunate brethren, but also for the widows and orphans? I trust that the Members will yet make a strenuous effort to bring this embryo charity into life and vigorous activity, that it may stand a lasting monument of the kindly feelings which actuated the founders of our institution, and perpetuate amongst us the character which the bard ascribes to the charitable man—

> "For his bounty,
> There was no Winter in't; an Autumn 'twas,
> That grew the more by reaping."

To return to the period of our first Anniversary: we numbered at that time amongst our Members and Associates individuals from nearly every county in England, and many in Wales, Scotland, and Ireland; it then became necessary that we should adopt some channel by which we might exchange opinions, and know what was occurring both centrally and around us. How was this to be effected? Through that mighty engine the press; drawing us together as it were (for the time of perusal at all events) even at our own firesides, where, although separated by hundreds of miles, we might trace out the matured ideas of our *quondam* boy companions. Fortunately this means of communication was at hand. Mr. Jacob Bell had already, with much spirit, ability, and zeal, in furtherance of the great object we all had in view, edited a periodical called the PHARMACEUTICAL JOURNAL. The opportunity was embraced of recording our

Transactions in that work; and from that time has a communication between the Members been kept up, and, I need scarcely say, highly to the gratification as well as edification of all. During the second year of the Society's existence the Examinations were carried into operation. Many young men presented themselves, and passed the ordeal most creditably; to these of course the well-earned certificates were awarded. This year was marked by a most important epoch in the annals of the Association, viz. the Incorporation of the Society by Royal Charter. I need make no comment upon this most gracious and judicious act of Her Majesty. There are few societies composed of so many Members where matters have glided on so smoothly and prosperously as has been the case with us. The several Committees have been attentive, weighing well every matter that was brought under their notice, and the Members have been indulgent, knowing that their trusts were in the hands of diligent stewards.

In the third year the improvement of education was mainly attended to, and branch schools in Manchester, Norwich, Bath, and Bristol were established; additions were made to the Library and Museum; the Lectures were fairly attended; apparatus was purchased, and a proposal was made to form a Chemical and Pharmaceutical Laboratory for practical purposes. Considering our state of funds, a large sum of money was voted to carry into effect this last proposal; but it was no waste—it was perhaps as yet the best expenditure made! What were the returns to be? Riches! aye, riches of the mind, as Lucian says, the only true riches! *πλοῦτος ό της ψυχῆς πλοῦτος μονος εστιν ἀληθης.* From this laboratory we are to expect practical men—men who will become ornaments to the occupation they profess.

In furtherance, also, of the Educational Scheme, a Scientific Committee was formed, securing the assistance and co-operation of several gentlemen distinguished for their attainments in the knowledge and investigation of the various departments of Natural History, and the properties of substances and products comprised in the Materia Medica. From this time the Society has progressed favourably; the Members and Associates are united in wishing prosperity to one common cause, and all appears based on a solid foundation. We can boast of possessing a good Pharmaceutical Library, an excellent Museum, many of the specimens in which afford examples of the industry of our Students; and altogether the internal machinery works well.

You will have observed, gentlemen, that in drawing up this very brief sketch of the history of our Institution, I have not yet alluded to the watchful interest the Council have taken when anything has occurred from without that was likely to injure or affect the rights of our Members. Thus, when Sir James

Graham's Medical Bill was threatened, they at once took into their serious consideration those parts referring to the Chemist and Druggist, and although the Bill was not carried through the House, still they were at their post, and ready to advocate the interests of the body. Again, when several of our Members were tricked by common Excise informers, they felt it their duty, as the representatives of so important an Association, to wait upon the Board of Excise, and succeeded in drawing the attention of that Board to the necessity for an alteration in the laws with respect to the sale of spirit of wine as a medicine by Chemists and Druggists. Again, to the prompt measures adopted by the Council when the Spirit Licence and Duties' Bill was before the House, may be attributed the escape of the Chemists of this Country from an annual tax of two guineas, and from the obnoxious jurisdiction of Excise Officers.

The draft of a Bill has been submitted to the Members of the Society, for regulating the qualification of Chemists and Druggists throughout England and Wales, which has for its object the elevation of this branch of study; and measures are in progress for obtaining its introduction into Parliament.

When we consider that from the earliest periods the science of Chemistry, which forms so important a part of the knowledge requisite for the qualified Pharmaceutist, has occupied the attention of many distinguished men throughout all ages, we cannot but feel proud of having chosen, as a means of gaining a livelihood, so interesting, so absorbing, and so honourable a pursuit. It is to the younger and rising members of our body, however, that we must look for carrying out the improved system that has now so happily commenced among us. The Chemist and Druggist must be required to know something more than the price of a drug. He must be acquainted with its composition and properties—with the preparation to which it may require to be subjected, and the decompositions which this preparation may involve. This knowledge is to be bought, not with gold alone, but at the expense of much perseverance, study, observation, and research. The philosopher's stone and the transmutation of metals into gold are yet to be attained—not in the literal sense it is true, but in education. Education is the philosopher's stone. Education is the secret of transmutation. The pupil or apprentice previously to commencing his apprenticeship to the study of Chemistry, should have gained a fair knowledge of the Latin language—so many of the terms he will meet with are of Roman origin, that this attainment is highly necessary—many works from which much information is yet to be obtained are written in that language, the Drugs, Chemicals, and preparations are named in this tongue, as also are the directions in the Pharmacopœia, and in prescriptions. Now I hold it essential that a student should be well schooled in Latin previously to his writing a single direction as to the administration of any medicine. A slight error may endanger the life of a fellow-creature, and should a fatal accident occur, how bitter must be the reflections of the unfortunate dispenser whose ignorance has occasioned it! A knowledge of other sciences besides Chemistry is also necessary to the Pharmaceutist; thus, Botany, Mineralogy, and Zoology, all have a bearing upon Pharmacology. Many Pharmaceutical operations are effected by merely mechanical means, and a knowledge of some of the principles of mechanics will, therefore, form a branch of the education of the accomplished Pharmaceutist. Even mathematics will come in for a share of the attention of the student, for this alone will enable him to understand the principles of Crystallography.

On the continent, where every Pharmaceutist is required by law to pass through a course of education such as I have alluded to, the Members of this profession hold the rank to which they are entitled as *practical Chemists* in the strict sense of the term. They include among their numbers men eminent even as philosophers—men who have contributed, not only to the advancement of that particular department of Chemistry which they follow as a means of support, but also to the improvement of many of the arts and manufactures. And why should the Pharmaceutists of this country be less proficient and useful than those of the continent?

The Chemist, if he exercise his avocations as he should, is destined to be a most useful member of society. He is enabled by analysis to point out all that may be beneficial or hurtful to the life of man. A family in the plenitude of health and vigour withdraw from a country residence and take up their abode or habitation in a town, aye, even in London itself. A large house in a good street may be occupied—prosperity attend them in all their worldly affairs—they may have every comfort, but still are affected by lowness of spirits, loss of appetite, headache, affections of the bowels, fever, and one after the other they sink into the grave, without an apparent cause. The skill of the medical man has been baffled—the cause has been overlooked—the Chemist arrives, and by analysis discovers that the enemy of life has been subtile and unseen. Bad water and vitiated air have constituted the foes against which the unaided skill of the Physician has been unable to contend.

The mortality from fever alone in this country is quite dreadful to contemplate—cholera, black death, the sweating sickness, the plague, and typhus, are all more or less aggravated forms of fever, arising for the most part from preventable causes. It almost surpasses belief, that in this country alone no less than one million people are annually attacked with fever, and that one in every ten thus infected dies. Wherever the greatest number of persons congregate, wherever there is the greatest quantity of filth collected, where you find a want of ventilation and cleanliness, there you are sure to find the greatest mortality occurring. The most unhealthy city in this country is Liverpool, and the following is the average number of years attained by the various classes of society there:

Gentry	43 years
Tradesmen	19 "
Operatives	16 "

These extraordinary facts have been proved by Duncan's admirable Reports to arise from the overcrowded state of the working population, bad ventilation, defective sewerage, and an insufficient supply of water. Out of 1000 children born in Liverpool, 528 die before attaining five years of age; in London the number is 408. The world appears to be awakening from an apathy which has long prevailed. Authorities, whose duty it was to have seen these sources of pestilence removed, have at length ascertained, through the labours of the Chemist, that in that accumulated filth lie hidden treasures of great value. Ships have been fitted out to import from Ichaboe and other islands the excreta of birds to be used in this country for agricultural purposes, whilst actually the Chemist demonstrates that the very same materials are being conveyed into rivers, there either to accumulate upon the banks, carrying pestilence wherever they settle, or else being returned, as they are in London, by the water companies in solution, to repass through our bodies, or cleanse the surface of our skins. Our friends in Edinburgh have been for some time aware of the true value of this man-destroying refuse, and lands in the neighbourhood of that beautiful city, which formerly yielded but £3, £5, or £10 per acre, now by its application produce crops to the value of £20, £30, £40, and even £50 per acre. What is this owing to? Why to the labours of the Chemist—he is the friend then to the Agriculturist, at the same time that he is the preserver of the health of the community at large!

I have been induced to offer these observations in consequence of the movements lately made to improve the sanitary condition of this great country. True it is that some private interests must suffer for the general good; but it is to be hoped that a wise legislature may be enabled favourably to meet all obstacles to the attainment of so laudable, so important, and so beneficial a measure.

Were the Chemists and Druggists of this country well educated and fully qualified, who can calculate the extent of the advantages that would result from the labours of a body of practical men, capable of detecting the evils and suggesting the remedies to which I have alluded? Nor would these advantages be confined to sanitary measures.

The attention of Chemists has recently been directed to the composition of explosive materials. The invention of gunpowder is supposed by some persons to have lessened the horrors of war, and the discovery of some still more powerfully explosive compound, applicable to the same purpose, may be expected to produce a still further amelioration in this respect. When the explosive cotton was first brought before the notice of the public, it was thought that it would far exceed gunpowder in power and destructiveness as an engine of war. Further experience, however, has proved, that although, perhaps surpassing all other substances in its applicability for the blasting of rocks, &c., yet that it is not likely to prove available in warfare, on account of some defects that have not yet been remedied. Here then, is a field for speculation and research.

It is refreshing to turn from the subject of war, involving as it does the destruction and misery of so many human beings, to the more pleasing researches of the Chemist, in the alleviation of the sufferings of his fellow-creatures. For some years in America, Dentists have been in the habit of having recourse to the administration of the vapour of ether, previous to the extraction of the decayed or offending tooth. Within the last few months, the plan has been adopted by Surgeons generally, in this and other countries, when it has been found necessary to remove any morbid growth, or sever a limb from the trunk. If properly and carefully applied, there is little doubt but that this discovery, of deadening for a time the sensibility of the human frame, may be considered as one of the greatest blessings that has of late years occurred to mankind. What can be more horrible than the contemplation of inflicting with the knife's keen edge, some dreadful mutilation of a poor helpless child, already reduced to the extremity of weakness by the continued suffering that it has undergone in striving against the disease! Can it be wondered at that mothers so often delay the performance of the required operation, catching, perhaps, at some faint gleam of hope, that nature may yet attain the mastery over the Surgeon? How many a life has been sacrificed by this unfortunate though pardonable error of procrastination! The certainty of freedom from pain by the inhalation of this potent vapour, at once dispels all fears and anxieties on account of the infliction of torture that may have arisen, and the needful operation is effected during a dream that has transported the child into some visionary garden of Paradise, or has led it to suppose itself nestled in the fostering bosom of its tender mother. It is to the Chemists in this country that the public are indebted for those inventions of apparatus which shall most readily effect this much desired end—a worthy emulation has been excited, and their mechanical ingenuity and scientific knowledge have been turned with advantage to this great work of humanity. As much of the success of the effects produced upon the system depends also upon the purity of the ether, the preparation of this volatile fluid has received a considerable amount of attention in consequence.

I trust that you will not think me prolix, if I occupy a few minutes more of your time in drawing the attention, especially of the younger portion of my audience, to whom these remarks are chiefly addressed, to a few more of the advantages that the working and practical Chemist confers. The composition of the diet of man has lately formed an interesting object of investigation, and foods, which in former years have been thought to possess much nourishment, are now found to yield but a very small proportion of the ingredients capable of forming the tissues of the body. Taking vegetable substances as an example, and considering as correct that theory so generally entertained at the present day, that animal temperature is in a great measure maintained by the carbonaceous matter taken into the system, and that the structures of the body more immediately concerned in the active duties are dependent for their formation upon the azotized principles, we shall see at once how useful a part the Chemist has played in bringing to light this most important and interesting knowledge; and the Chemist, to whom we are mainly indebted for the elucidation of these views, was, not many years ago, a Pharmaceutist.

A large proportion of the articles of vegetable diet consists essentially of water, starch, and fibrine; the starch being the heat-producing, and the fibrine the azotized or nutritious part. As a general rule, therefore, those substances which contain the largest quantity of fibrine will be the most nutritious. Now, if we examine the potato with reference to this means of estimation, it will be found that one hundred parts of potatoes contain

Water	72 parts.
Starch	26 "
Fibrine	2 "

Two pounds only of nutritious matter in one hundred pounds of potatoes! If used as the only article of food, it must be admitted that the potato is very deficient in the means of nourishment, while there is excess of starch, a great portion of which passes through the alimentary canal unaltered. It is a well-authenticated fact that, upon the average, every Irish peasant eats fourteen pounds of potatoes daily, and this he is obliged to do in order to get sufficient nutriment for his support. When an Irish labourer comes into this country, he, in a great measure, loses his character for laziness, or, I would rather say, debility, brought on by the nature of his former food. In this country his wages are sufficient to enable him to purchase meat and bread. His vigour increases, and he performs the most arduous of all tasks as a hod labourer or porter.

It is to be hoped that the Irish peasant will ere long cease to depend solely on the potato for his sustenance, but will be induced to cultivate other more nutritious vegetables. Wheat contains 23 per cent. of azotized matter; barley, 14; oats, 11; maize, 7; rice, 3; peas, 29; beans, 31; lentils, 33. Here, however, a question arises, as to how far the three last-named vegetables, which appear to be so rich in nutriment, might be substituted for the innutritious potato. According to some authorities these substances do not constitute good articles of diet, in consequence, probably, either of the azotized matter being in excess, or of its being defective in some of its properties. There is ample scope for the investigations of the Chemist in reference to this important question.

Thus, Gentlemen, I have endeavoured to lay before you a brief sketch of the history of our Society and its great use to the rising generation. Long may it prosper and flourish! I have also done my best to show what inward and mental comforts may attend the right-minded and well-educated Chemist, and how important and useful a member of Society he is and must always remain. Let us then

> "Range the plenteous intellectual field,
> And gather every thought of sovereign power,
> To chase the moral maladies of man;
> Thoughts which may bear transplanting to the skies,
> Though natives of this coarse penurious soil,
> Nor wholly wither there, where seraphs sing:
> Refined, exalted, not annulled in heaven."

The Secretary then proceeded to read

THE REPORT.

The Council have now to present the Sixth Annual Report, which they trust will prove that the leading objects of the Society have received due attention from those to whom the management has been confided.

FINANCIAL REPORT.

Receipts and Expenditure from Jan. 1st. to Dec. 31st, 1846.

Dr.

				£	s.	d.
Balance in hand				283	18	8
Interest—Life Members				19	0	4
Benevolent Fund Interest	61	0	4			
Subscriptions, &c.	127	1	0			
				188	1	4
Interest on Druggists' Old Fund				30	3	6
Interest on Government Securities				47	6	7
352 London Members				554	8	0
1273 Country Members				1336	13	0
Entrance Fees				92	8	0
1060 Associates				567	0	0
221 Registered Apprentices				121	5	6
Registration Fees				25	15	6
Subscriptions for 1845'				22	1	0
Lecture Fees				114	8	0
Sale of Journals				15	16	0
Balance due to Treasurer				299	2	9
				£3717	8	2

Cr.

	£	s.	d.
Investment—Life Members' Fund	19	0	4
Investment—Benevolent Fund	160	0	10
Investment—Druggists' Old Fund	44	17	7
Furniture	5	16	6
Museum	77	8	4
Postage	30	10	7
Delivery of Journals	139	5	8
Rent, Rates, and Taxes	376	5	2
Stationery	20	17	0
Advertisements	46	18	0
Salaries	305	0	0
Wages	186	7	6
Journals	797	10	0
Printing	53	17	6
Commission	54	15	3
Law Costs	9	12	4
House Expenses	36	4	7
Sundries	13	9	6
Lectures	765	14	10
Laboratory	519	6	4
Library	19	8	7
Fixtures and Fittings	2	8	6
Apparatus	6	15	6
Travelling Expenses	72	17	6
Cash in Secretary's hand	1	0	0
	£3717	8	2

We, the undersigned Auditors, have examined the Accounts of the Pharmaceutical Society, and find them correct, agreeably with the foregoing Statement; and that there was standing in the names of the Trustees of the Society, at the Bank of England, on the 31st December, 1846,

		£	s.	d.
On Account of the General Fund	3¼ per Cent. Reduced	3000	0	0
Benevolent Fund	3 per Cent. Consols	2261	17	1
Druggists' Old Fund,	New 3¼ per Cents.	1000	16	7
Life Members' Fund,	3 per Cent. Consols	672	10	11

John Wyman.
William Hooper.
William Arnold Baiss.
George S. Pedler.
William Orridge.

THE BENEVOLENT FUND.

The Members will observe in the financial statement, that the subscriptions and donations received on account of this fund, together with the interest on capital, amount to £188 1*s.* 4*d.* The reduction in the terms of subscription, so strongly advocated by some of our Members, of necessity precludes the possibility of appropriating any portion of the current income of the Society to the Benevolent Fund. The Council trust that the advocates of the reduced subscription, as well as the Members generally, will exert themselves on behalf of this fund.

THE ENTRANCE FEE.

During the past year several appeals were made to the Council by Members in the country for the removal of the Entrance Fee claimed from those Chemists who, by virtue of an exception in favour of those who were in business before February 18, 1843, are admissible as Members without examination, but who according to the bye-laws pay an Entrance Fee of two guineas. It was urged that this fee operated prejudicially to the welfare of the Society by preventing a large number from joining it. The Council in consideration of this appeal, issued a circular, requesting the local Secretaries to take the sense of the Members generally on the subject. From the answers received it appeared that a large majority of the Members were opposed to any further change in the terms of admission, some parties expressing dissatisfaction at the reduction which had already taken place.

THE SPIRIT LICENCE AND DUTIES BILL.

Among the proceedings of the Society during the past year, the Council desire to call the attention of the Members to the satisfactory result of their appeal against the Spirit Licence and Duties Bill, in September last; for although most anxious to aid the Government in the suppression of frauds on the revenue, so injurious to the honest trader, they must nevertheless congratulate the Members on the withdrawal of the objectionable portion of the proposed Bill, which had unobserved passed a second reading, and would, had it become law, have proved a serious inconvenience and expense to Chemists.

THE EXAMINATIONS AND THE SCHOOL OF PHARMACY.

If any proof be required of the importance and even the necessity of practical Pharmaceutical studies, it is furnished, in the opinion of the Board of Examiners, by the result of the past year; a manifest improvement having taken place in the proficiency of the Candidates for examination. This more especially applies to those who have devoted a session to practical study and attendance in the lecture room. Some very satisfactory examples have occurred of proficiency resulting from private reading in the prospect of the examination; but the Examiners feel it to be their duty most strongly to recommend to all young Chemists a period of study unfettered by business occupations, in support of which they need only appeal to the evidence afforded by the success of the Practical School of Pharmacy in facilitating the acquisition of knowledge, and thus raising the qualifications of the Students.

The number of Students in the Laboratory during the present session has been twenty-six. Within two years upwards of fifty have entered to the Practical Class in the Laboratory, exclusive of those who have merely attended the Lectures.

THE PHARMACEUTICAL BILL.

One of the most important subjects which the Council have to bring before this meeting, is the proposed Bill for regulating the qualification of Chemists and Druggists.

At our last Anniversary, the draft of a Bill was presented to you and your opinion taken respecting it: the result of which, joined with the observations made at repeated interviews with learned bodies interested in the question, having led to some considerable modification, it is now submitted to you in its new form.

The Council, however, wish it to be understood that the Bill, even in its present state, may probably undergo some modification; but they trust that its general principles will be found to be satisfactory, and that the difficulties formerly considered insurmountable may be overcome in the manner suggested by some of our Members at the last Annual Meeting. The Council have pleasure in stating that the leading Members of the Medical profession and the public generally, are now fully impressed with the absolute necessity of a legislative enactment for regulating Pharmacy. It is probable that in this age of free trade, no powers of an unnecessarily restrictive character would be granted by Parliament, but the Council feel it to be their duty to urge upon the legislature the necessity of providing the public with qualified Pharmaceutical Chemists, and prohibiting the assumption of any title implying qualification by persons who have no legal right to assume it; by which means the public and the profession will become themselves responsible for any result which may arise from the employment of incompetent persons.

Mr. Philpot moved the first Resolution, "That the Report now read be adopted, and be printed in the Transactions of the Society."

Mr. Humpage briefly seconded the motion, observing, that after the excellent Address which had been delivered by the President, it was unnecessary for him to add more than the expression of his accordance with what had been said, and his sincere attachment to the interests of the Society.

Mr. Tosswill said he was anxious before this motion was put to make a few remarks, with reference to one of the subjects adverted to in the Report, namely the Benevolent Fund. He had been much gratified to hear the observations which had been made on this subject by the President, and was very anxious that some means might be suggested for promoting the increase of this fund. On the first establishment of the Society it had been the practice to make a yearly grant of £500 to it from the general funds of the Institution; but it was well known that since the reduction in the subscription it had been found impossible to continue this practice. Some of the Members, it was true, continued to pay the difference between the former and the present subscription expressly to the Benevolent Fund; but the amount received in this way, together with the interest on the sum already set apart, was but small. He trusted that something might be done ere long to give a new impetus to the furtherance of this important object of the Institution.

Mr. **Thomas Herring** was so fully convinced of the advantages resulting from the efforts made by the Society in promoting education, and improving the general condition of the Chemists and Druggists, that he was anxious to promote the success of the undertaking in every way in his power. With reference to the Benevolent Fund, he had on a former occasion suggested, and he now again repeated the suggestion, that they should have a Dinner, with the view of raising special subscriptions for the fund. This was the plan they adopted on similar occasions in the city, and they generally found it the most successful means of opening the breeches pocket.

Mr. **Bartlett** advocated the adoption of some means for bringing the Benevolent Fund into speedy operation.

Mr. **Waugh** expressed his approbation of all that was stated in the Report, but wished at the same time to call the attention of the Council to what he considered to be an omission in it. He alluded to the subject of what was called the "Early closing Movement," which was known to occupy much of the attention of a great number of the Associates and some of the Members of the Society. He thought the Council would have done well to have made some allusion to this subject in the Report; at the same time he wished it to be understood that he was himself in no way identified with this movement, as he had taken no part in it.

Mr. **Fordred** entirely agreed with what had just fallen from Mr. Waugh, whose allusion to the subject had afforded him much satisfaction. He (Mr. Fordred) had for some time past interested himself in promoting the early closing movement, and he had hoped to have found the subject alluded to in the Report. He might observe, that he had attended a meeting recently held at Freemasons' Hall on this subject, when some reflections were cast on the Pharmaceutical Society; but he entirely dissented from much that was said on that occasion, and was anxious not to be thought to have concurred in the censures cast on the Society. There was one point, however, with reference to which he was desirous to receive some explanation, and that was why the use of the Society's rooms had been refused for holding a meeting on the subject of early closing?

Mr. **Morson** said, that although the subject which had just been brought under their notice was not one in which he had taken any part, he would reply to the observations of the two last speakers. With reference to the refusal of the use of the rooms for the meeting alluded to, he might state that as the application was not made on behalf of the Members of the Society, but of the trade at large, and principally of Assistants and Apprentices, the Council considered that it was not in their power, under such circumstances, to grant the request. The Council had acted on a similar principle in other cases; thus, for instance, their President had with great kindness wished to entertain the Council and a large number of the Members of the Society at a Conversazione, which he proposed giving at his expense in the House of the Society (his own house being too small); but the Council felt themselves under the necessity of refusing the use of the rooms for such a purpose, as it could only be considered a private party, not comprising all the Members of the Society. In the case under consideration the applicants must have been aware that the granting of their request would have established a very dangerous precedent, and he could not help thinking they must have anticipated the answer they received. With regard to the objects those gentlemen had in view, there was not, in his opinion, a Member of the Council, or even of the Society, who would not rejoice to be enabled to close his shop at an early hour; in fact, it would be to the master as great a boon as it would be to the assistant. But with the Chemist and Druggist the case was very different from that which applied in many other instances; medicines must be had at all hours when required, and the Druggist must submit to some of the inconveniences which attach to every department of the profession of medicine—inconveniences which press less heavily on him than on the Medical Practitioner. There were no doubt some localities and some descriptions of business in which early hours might be adopted; but there were others where, in the present state of society, it was impossible. No uniform rule could be applied; but he was quite ready to admit that all that was practicable ought to be done by the Members *individually* to afford reasonable time for recreation and for study to the young men in their employment; in some cases this might be more conveniently arranged in the morning than the evening, but this must of course be regulated by circumstances. Much difference of opinion existed among the Members of the Society, as to the possibility or the means of effecting a change beneficially, and the Council were of opinion that it was not a question in reference to which they ought collectively to take any active steps, but that it should be left to the individual exertions of the members acting upon their own judgment in their several localities. Nothing could be more contrary to truth than the statement that had been made by some of the leaders of this movement—that the Council were not anxious for the educational improvement of the Associates of the Society, as they refused to exert themselves to get a time set apart from business for study. He, for one, did not consider that after active exertion in business through the day, the period after nine o'clock at night was that at which a young man was best fitted for serious study; he thought the morning a much better time. But he was convinced that young men could not acquire a good Pharmaceutical education without devoting at least one year to practical manipulations and lecture attendance, unfettered by business restrictions, and such arrangements ought to be made at the expiration of every apprenticeship. This practice was uniformly adopted on the continent, and must sooner or later be introduced here. The Council were doing all they could to promote the general interests of the Associates and of the trade at large, and he trusted that the young men would not suffer themselves to be misled, but look to the character of their advisers, otherwise they might discover their mistake when too late, Mr. **Tosswill** could assure the gentleman who had introduced this subject, that the Council were not averse to the closing of shops at as early an hour as was found practicable, but they disapproved of the means adopted by some parties for promoting this object; and as much difference of opinion existed as to these means, he thought it had been wise to omit such an element of discord from their Report.

Mr. **Jacob Bell** stated that he was desirous, by every means in his power to promote the closing of shops at as early an hour as circumstances would admit; but had always opposed the discussion of the subject by the Society, because he had observed that it invariably occasioned unpleasant feelings, and tended to disturb the harmony which was so essential to the welfare of the Members. It had always been his object and the policy of the Society to conciliate individuals and to avoid any subject likely to engender discordant sentiments. To the perseverance in this policy might be attributed the unanimity and cordiality which had of late years prevailed among Chemists and Druggists, and which he hoped would continue to increase. He had ascertained by writing to the local secretaries in upwards of eighty provincial towns, that since the establishment of the Society a considerable reform had taken place in the hours of business in consequence of the increased sociability among the Members, and he felt persuaded that the object in view was much more likely to be accomplished by pursuing the course hitherto adopted by the Society, than by discussing officially a subject in which the Council had no power to interfere, and which had always been found to awaken discordant feelings when agitated in this manner. There was another reason why neither he, nor any other Member of the Council, could with propriety take a part in the proceedings under consideration, namely, that some of the leaders of the movement were endeavouring to effect their object by a system of low abuse. Such conduct was not likely to lead to a favourable result,and so long as the Associates were under such guidance they could not expect to be joined by those who are sincerely desirous, and probably better able to promote their welfare.

Mr. **Humpage** was glad this subject had been brought under the notice of the Meeting: it was one in which he felt some interest, although he confessed he did not see any practicable means by which the objects contemplated could be carried out. But as much excitement had been created with reference to it among a large number of the Associates of the Society, who fancied that a remedy might be found for the evils complained of, he thought the discussion of the subject by the Members, in the spirit which had been manifested on the present occasion, would serve as oil to the troubled waters. He had attended the meeting at Freemasons' Hall, when much acrimonious feeling was manifested, which he deeply regretted: he had defended the Society against the unjust attacks that were then made upon it, and was happy to say, that the defence made by himself and others was very favourably received by the meeting.

Mr. **Waugh** expressed his entire satisfaction with the result of the discussion of this subject—the purpose he had contemplated was fully realized. As allusion had been made to the refusal of the use of the Society's rooms, by the Council, for a meeting on this subject, he might state that when he first heard of that decision he fully agreed with the Council, and he still thought they had acted judiciously in adopting that course.

Mr. **Fordred** said he was quite satisfied with the explanations and statements that had been given, and thought that good would result from the discussion of the subject.

Mr. **Herring** was persuaded that to realize the expectations of some of those who took part in this movement was impossible. When movements of this kind were commenced it was difficult to say where they would stop. Thus, since the Assistants in the retail houses had been trying to promote early closing, a similar attempt had been made among the wholesale houses, who already closed at *eight o'clock*, an hour that the retail Chemist would call early.

Mr. **Philpot** inquired whether the advocates of the early closing movement had considered what would be their position, if they were to close their shops at an early hour, while the General Practitioners keep their shops open until midnight. He feared that the object could scarcely be attained without serious inconvenience, however desirable it might be on general grounds.

Mr. **Savory** had been anticipated in some of the remarks he had purposed making on this subject. He could confidently state that he did all that the nature of his business permitted to afford time for recreation and study to his young men; every facility was afforded them for attending lectures, and no less than five from his house were at that time attending the lectures at that Institution. He was happy to do all that lay in his power in this way, so long as it was left to the judgment and discretion of the employers, but he would resist any attempt at intimidation or coercion.

The Resolution was then put and carried unanimously.

Mr. Jacob Bell, in moving the next Resolution, observed, that since the publication of the draft of a Bill, he had received many communications from Members in various parts of the country, and some useful suggestions had been made, the most important of which he would briefly state. It was suggested that some proof of apprenticeship, or equivalent education, should be required from all persons claiming to be registered as Pharmaceutical Chemists, in order to prevent imposition. Some correspondents desired more stringent restrictions on the sale of medicines by grocers, oilmen, &c. This subject had been repeatedly discussed by the Council, and it had been thought prudent not to endanger the success of the Bill, by claiming more than was likely to be conceded in this age of free trade. Some regulations respecting the sale of poisons had been recommended, provided they could be introduced without occasioning any serious obstruction to the ordinary routine of the dispensing business. The penalty clauses had been considered rather too severe, and objections had been raised against the summary conviction of offenders before magistrates. It was suggested that a power of appeal to a higher tribunal should be permitted, and that every precaution should be taken to prevent undue severity. A complaint had been made by some Members in Edinburgh that the proposed Bill was not applicable to Scotland. This was an omission which could very easily be rectified if a general desire to this effect should be expressed. Many Associates were dissatisfied because the Bill contained no clause specially exempting them from examination. This objection could be met by a very simple alteration in the words of one of the clauses. A great number of letters had been received advocating the exemption of Chemists from serving on juries, &c., and representing the danger to which the public are exposed for want of this regulation. It had always been the intention of the Council to endeavour to obtain the introduction of such a clause as soon as an opportunity presented itself of producing the evidence of its necessity. The only objection which had been raised against the Bill by the Members of the College of Physicians, had reference to the constitution of the Board of Examiners, as some Members of the College considered that their body ought to have, partially or entirely, the control of this office. This opinion, however, did not appear to be general, several Physicians having approved of the Bill provided the examinations were conducted by Chemists, and objecting altogether to any interference on the part of the College. The Council had always been desirous to act with the utmost courtesy and respect towards the College of Physicians, and on this account had conferred with the President and Censors on the subject; but the result of repeated consultions had been the conviction that the proposed amalgamation was impracticable, and that it was absolutely necessary to preserve the independence of the Pharmaceutical body. There was reason to believe the College would not offer any opposition when an opportunity should occur of fairly discussing the subject. Several of the leading Members of the body of General Practitioners had also approved of the Bill, and had only desired the insertion of one additional clause, clearly defining a Pharmaceutical Chemist to be a vender and dispenser of medicines who does not visit patients. To this there could be no objection, it being of great importance to maintain a proper distinction between the Medical Practitioner and the Chemist, and to prevent any unnecessary encroachment on either side, alike injurious to both parties. In mentioning to the Meeting the above suggestions, which were all worthy of consideration, Mr. Bell had much pleasure in stating that he had not heard a single objection raised against the general principles of the Bill, and that it would not be at all difficult to introduce such modifications as would remove the defects which had been pointed out in some of its clauses. He held in his hand thirty-six petitions from Medical Practitioners in favour of a Bill for regulating the qualification of Chemists and Druggists. Some of these petitions were signed by the leading Members of the profession in London, others were from provincial towns, and were numerously signed by Physicians, Surgeons, and General Practitioners. A large number of petitions from Chemists and from the public, as well as some from Medical Practitioners, had already been presented to Parliament; but the most important medical petitions had been reserved, in the hope that Sir George Grey would afford to a deputation the opportunity of placing them in his hands personally, and at the same time calling his attention to the draft of the proposed Bill. But Sir George Grey had, in answer to a Memorial from the Council, stated that it was impossible for him, on account of pressure of business, to appoint a day at present; and he (Mr. Bell) would therefore move as his Resolution, That the petitions be forwarded to Sir George Grey, with another Memorial. It appeared that the Government had so great an aversion to the subject of Medical Reform that it was extremely difficult to induce the Secretary of State to entertain any question allied to it. The Council having failed in their efforts by Memorial, and various private channels, to obtain access to the Secretary of State, had considered it requisite to apply to the Members of the Society, and to force the subject upon the attention of Parliament by means of petitions. This course would without doubt be attended with a good result; but it would in all probability be necessary once more to petition the House; the period when such support was most important being when the Bill was in Committee or about to pass the third reading. He hoped the Members would not object to this additional trouble, when it was recollected that the Bill was calculated to raise the character and condition of the Pharmaceutical body, and to complete the undertaking in which they had been zealously labouring during the last six years. If any other stimulus should be wanted, he might observe that they had gone too far to recede. The arguments and statements of the Chemists in proof of the necessity of an improved system of education would, if they should relax in their zeal, be brought forward against them by others. The fact was now clearly established that a Bill must be passed, and it remained for the Chemists to decide whether they would persevere in carrying a Bill similar to the one now proposed, or whether they would sacrifice their independence as a body, and allow themselves to be handed over to the jurisdiction of Apothecaries' Hall. He felt persuaded that one more effort, if vigorously supported by the whole body, would be attended with success, and was desirous that no time should be lost in bringing the Bill before the House of Commons in order that it might be revised, printed, and circulated for the consideration of the profession during the recess. He therefore moved,

"That the Council be authorized to forward the Medical Petitions to Sir George Grey, and to use every practicable means for obtaining the introduction of the Bill, for regulating the qualification of Chemists and Druggists, into Parliament during the present session, either by the Government, or by some influential Member of the House of Commons."

Mr. **Stamper** seconded the motion.

Mr. **Edwards**, of Dartford, wished, before this Resolution was put to make a few remarks with reference to some of the details of the proposed Bill. He alluded principally to the proposed method of effecting the registration of existing Chemists and Druggists, and to the distinction which would exist under the Bill between the registered Chemists and Druggists and the Members of the PHARMACEUTICAL SOCIETY. He thought that further consideration should be given to these points before the Bill was proceeded with.

Mr. **Bell** said, there would be ample opportunity for reconsidering these and others of the details of the measure.

The Resolution was then put and carried.

The meeting next proceeded to the election of Council and Auditors, the result of which was as follows:—

Members who continue in the Council, by Lot, agreeably with the provisions of the Charter:—

Bartlett, William, 1, Brettin Terrace, Chelsea.
Bell, Jacob, 338, Oxford Street.
Colk, George, 29, Fleet Street.
Garle, John, 12, Kensington Terrace, Gravel Pits.
Squire, Peter, 277, Oxford Street.
Ward, John, 79, Bishopsgate Street.
Watts, John, 106, Edgeware Road.

The following were elected Members of the Council for the next year:—

Edwards, George, Spital Street, Dartford.
Gibson, William, 15, Bigg Market, Newcastle-upon-Tyne.
Gifford, Joseph, 104, Strand.
Herring, Thomas, 40, Aldersgate Street.
Hooper, William, 24, Great Russell Street, Covent Garden.
Ince, William, 31, Southampton Street, Strand.
Morson, Thomas, N.R., 19, Southampton Row.
Pedler, George, 199, Fleet Street.
Pigeon, Richard Hotham, 31, Throgmorton Street.
Savory, John, 143, Bond Street.
Standring, Thomas, 1, Piccadilly, Manchester.
Terry, Stephen, 25, Milsom Street, Bath.
Tosswill, Charles Spearr, 8, Torrington Place, Torrington Square.
Waugh, George, 177, Regent Street.

The following were elected as Auditors:—

Hemmingway, Alexander, 28, Portman Street.
Jackson, William, 93, Cheapside.
Kelland, Richard, 21, Nelson Street, Greenwich.
Rouse, Benjamin, R.C., 9, Wellington Street, Southwark.
Taylor, Henry, 10, Pall Mall.

It was *moved by* Mr. Philpot; *seconded by* Mr. Bates, and carried unanimously,

That the Thanks of this Meeting be given to the Council for their very effective services during the past year.

A vote of Thanks was passed to the President, who briefly acknowledged it, and dissolved the Meeting.

ELECTION OF PRESIDENT, VICE-PRESIDENT,

AND OTHER OFFICERS OF THE PHARMACEUTICAL SOCIETY.

At a meeting of the Council, held on Monday, the 24th of May, the following officers were elected for the ensuing year:—

President	Mr. John Savory.
Vice-President . .	Mr. T. N. R. Morson.
Treasurer	Mr. R. H. Pigeon.
Librarian and Curator of the Museum	Mr. Redwood.
Secretary	Mr. G. W. Smith.

LIST OF MEMBERS (*continued*).

Elected in May.

BIRMINGHAM	Waterson, John, 168, Hockley Hill
BLACKBURN	Lewis, John, 68, Church Street
BLACKWATER	*Withers, Richard, Yorktown
BRAINTREE	Ingledew, Thomas, High Street
FULHAM	Charsley, Nathaniel, High Street
GOSPORT	Fuller, Caleb, High Street
GREENWICH	Ackland, Benjamin, 2, Clarence Street
HARROGATE	Gascoigne, Geo., 10, Regent's Parade
HULL	Seaton, John Love, Whitefriars' Gate
MANCHESTER	Mumbray, Robert G., Bury New Road
	Wilde, Eli, 30, Swan Street
NEWCASTLE-ON-TYNE	Gilpin, Benjamin, 53, Pilgrim Street
TAUNTON	Beadon, John, Parade
WAKEFIELD	Stead, William, West Gate
WARMINSTER	Vardy, Samuel L., Market Place

ORIGINAL AND EXTRACTED ARTICLES.

ON THE PROPERTIES OF THE
BOCCONIA FRUTESCENS AND CLUSIA.

BY W. HAMILTON, M.B.

THE Bocconia frutescens is a shrub or small tree of about twelve feet high, not uncommon in Jamaica, Nevis, and St. Kitts, where it is commonly known by the names of celandine, parrot-weed, tree celandine, and in Nevis, parrot-weed. The trunk and branches contain a pith like that of the Sambucus nigra, or elder-tree of Europe; and its leaves, which bear a miniature resemblance to those of the Artocarpus incisa, or bread-fruit tree, are of a yellowish-green colour. The flowers grow in terminal racemes, are small, and in no respect striking: they are succeeded by a bivalved capsule, containing a single globular seed, imbedded in a pulp. It grows in shaded gullies on the skirts of the woods, and is a plant of light elegant appearance. According to Hernandez, one of the earliest Spanish historians of America, who speaks of it under the name of *Guauchilli, sive chilli* species, from its supposed resemblance in properties to the capsicum, or Chili pepper; it was cultivated by the ancient monarchs of America in their gardens; but whether as an ornamental shrub, or on account of its medicinal properties, does not appear. It probably blossoms more or less throughout the year; but I met it in flower chiefly between the months of May and October.

The whole plant abounds in a yellow acrid milk, like that of the *Chelidonium majus*, or *common celandine* of our hedges. This juice yields a tolerably deep and permanent yellow stain, of which advantage might, no doubt, be taken by dyers. The wood also is occasionally employed as a dye, and yields a good yellow—but of its durability I am unable to speak.

The sap is acrid, detergent, and escharotic, and is occasionally employed in the removal of films from the eye. Lunan, in the 1st vol. of his *Hortus Jamaicensis*, p. 171, says that,

> "The following has been recommended for the cure of a film on the eye, or a fungus. Take the root of this plant, peel off the bark, then scrape and strain it through a fine rag, when it may be put into a phial for use. Drop three or four drops in the eye, twice a day, and it will take off any film, occasioned by the small pox or otherwise, fungus, proud flesh," &c.

Dr. Barham, who recommends the yellow milk of the bocconia, as an application to herpetic eruptions, also speaks of its being used for the removal of warts and films from the eyes; but expresses a hesitation on his own part to employ it for this latter purpose, on account of its being, as he says, "so very sharp."

The root is applied as a detergent and escharotic cataplasm to ulcers and other wounds, especially when their healing is retarded by the growth of fungus, or, as it is vulgarly termed, *proud flesh*. The cataplasm is prepared by scraping off the bark of the root, and bruising it till of a proper consistence, after which it is spread on lint or a rag, and applied to the part affected, after the previous removal of the fungus flesh. By its stimulant qualities, which may be modified so as to suit the degree of irritability present, it promotes a healthy granulation of the part, and soon completes a cure.

Might not this sap be preserved in an inspissated form, and imported for use, either in medicine or the arts?

Its appearance, as it flows from the wounded bark or leaves, bears a strong resemblance to that of gamboge, and its properties as an internal remedy in cases of anasarca and other dropsical affections, might be found equally to correspond—it certainly deserves a trial on account of its acrimony; however, its first exhibition will demand considerable caution, commencing with the minutest doses, and qualifying its operation by admixture with other less irritating substances.

In the forests of the West Indies there is another tree found in considerable abundance, which yields a similar but more tenacious yellow juice, on making a section of its unripe fruit, the properties of which do not appear to have been ever made the subject of investigation, either for its economic or its medicinal properties.

This is the *Clusia flava*, known in Nevis by the names of *fat pork*, *monkey apple*, and *mountain* or *wild mango;* in Jamaica, by the name of the *balsam tree;* and among the French, by that of *figue modique*.

It is a tree of from fourteen to twenty or more feet in height, frequently growing upon other trees, and often upon rocks, where it could hardly be supposed able to find the slightest nutriment. According to Lunan, it is the only species known to be indigenous in Jamaica; but in Nevis and St. Kitts, two other species inhabit the mountain woods, namely the Clusia alba and Clusia rosea, both trees of from twenty to thirty feet in height, to which the local names, already noticed, are indifferently applied, all of which yield a sap whose properties appear to resemble those of the Clusia flava, or yellow balsam tree.

From every part of these trees, on being wounded, a thick glutinous adhesive sap exudes in the greatest abundance, the medicinal properties of which appear to have been known to the Charaibs, although neglected by their European successors. Barham indeed says, speaking of the *Clusia flava*—

> "I question not but the gum would be of great use if experienced, for we know not as yet the virtues of it, nor ever could meet with any that could give me any medicinal use of it; if the Indians know, they keep the use of it to themselves. They grow in great plenty in Jamaica, and are so plentiful in most parts of America, that in some places they mix this gum with tallow, and paint their canoes and boats with it, to make them glide through the water and preserve them from worms."

Lunan only acquaints us that, "wherever the trunk or branches are wounded, they throw out a thick resinous gum, *said* sometimes to be used as a vulnerary, but which has no smell or pungent taste."

The *Clusia alba* bears handsome white blossoms, succeeded by scarlet capsules, opening with five or six valves, which expand like rays. The glutinous sap obtained from this species, becomes red by exposure to the air, and like the former, is employed by the Charaibs for covering the bottom of their canoes in place of pitch. Birds feed with avidity upon its seeds, and thus they become active instruments of its dissemination: and from the circumstance of their frequently dropping the undigested seed upon the branches of other trees, they vegetate there, and thus the plants assume the appearance of parasites.

The *Clusea rosea* differs chiefly from the others in the colour of its blossoms, which resemble the rose, and in having its capsules suboctagonal and most commonly eight valved; it is a handsome spreading tree, blossoming in the months of March and April, the blossoms having from six to eight rose-coloured petals. On making a section of the unripe fruit, a tenacious glutinous juice of a bright yellow, resembling the colour of gamboge exudes, but from exposure to the air it soon turns to a dingy brown. These are the only species I have personally met with; but there are others found in the West Indies, which no doubt present similar appearances, and merit examination.

The forests of the West Indies abound in similar productions, the value of which has never yet been subjected to the test of experiment.

A country to be prosperous, should not rest its tenure of prosperity on one or two staple productions, precarious in their nature and uncertain in their return; like the cane, the Cacao (*Theobroma cacao*) and the coffee. A protracted drought, an unsparing hurricane, a remorseless flood, or an overwhelming fire, may wrest in an unlucky moment the brightest prospects of the planter from his grasp, and doom him to hopeless and irretrievable penury. But the indigenous productions of the soil, the ancient inhabitants of those perennial forests which clothe the mountains, and arrest the clouds in their course, will brave the tempest and survive the drought—holding out the infallible means of retrieving his prostrate fortune to the planter, who has energy to avail himself of them, and judgment to apply them rightly.

14, *Octagon, Plymouth.*

INJURY TO THE BINDING OF BOOKS
FROM CAUSES CONNECTED WITH
THE WARMING AND LIGHTING OF LIBRARIES.

The following statement embodies the result of various inquiries, which have been instituted within the last few years, relative to the great injury sustained by the bindings of books in the Libraries of the London Institution, and the Athenæum Club, from causes connected with the warming and lighting of those establishments. The experience obtained in both Libraries is identical. The surface of the leather of the binding loses its smoothness, and eventually the whole is reduced to a brittle substance, composed of a scarcely coherent powder, the boards coming off, and the back becoming detached; the disintegrated surface of the leather having an acid taste when applied to the tongue. Russia leather, whether old or new, is most and soonest acted upon; new calf binding next; then old calf binding; but morocco leather and vellum appear to be uninjured, as well as the texture of cloth binding, which merely becomes bleached. The books placed highest in the rooms are most acted upon.

Mr. Arthur Aikin, Mr. Faraday, and Dr. Prout, have given their attention to the subject, as arising in the Library of the

Athenæum. It would appear to result from their investigations, that there are two principal causes for the injury sustained by the bindings. These are, first, the highly-heated and very dry atmosphere to which the books have been exposed; and, secondly, the formation in the combustion of the gas with which the rooms are lighted, of an acid compound of sulphur, which eventually becomes sulphuric acid, and corrodes the leather.

The effect of the heat is due, it would appear, partly to mere desiccation, and in part to the development of sulphuric acid employed in the modern manufacture of calf leather; the hygrometric changes induced by the alternate high heating and cooling greatly favouring the operation of such an agent*.

The presence of an acid compound of sulphur in the results of combustion of the gas, has been ascertained both by Dr. Prout and Mr. Faraday, and evidence has been obtained, from bookbinders as well as from booksellers, of the deleterious action on bindings of gas-lights and gas-stoves. Some evidence also exists that heat, either alone, or aided in a very small degree by the products of combustion of the gas, will, to a considerable extent, injure new calf binding in the same manner. But it is manifest, from the circumstance, that in all cases, only those portions of the binding are acted upon which are exposed—that the effect is not due to temperature merely, but to *heated air*, of whatever composition.

To avoid this and other evils, so far as the gas is concerned, Faraday's gas-lamps have been adopted at the Athenæum, and with perfect success as regards the comfort of the apartments; but how far the injury to the bindings may have been prevented, is not yet known, sufficient time not having elapsed for comparison with the results of former experience.

It has already been stated that the experience on this subject acquired at the Athenæum, is identical with that which has been obtained in the Library of the London Institution. Here the effect on the bindings has been observed more or less, during at least the last fourteen or fifteen years (how much longer is not known). An acid taste, perceptible in the air of the Library when the gas is burning, led to the suspicion that it contained sulphuretted hydrogen, but experiment demonstrated that the gas as consumed in the Library was free from that compound. Subsequently, however, it was ascertained, that some combination of carbon and sulphur (or, at least, including those elements) existed in the gas, and produced an acid by its combustion. In like manner, Mr. Faraday was unable, for a considerable time to detect sulphur in the gas at the Athenæum, but at length he obtained ample proof of its presence. At the Athenæum, the bindings of the books placed highest in the rooms have been most injured; at the London Institution, those in the gallery, which is at once the hottest part of the library, and receives the greatest amount of the results of combustion of the gas, are most injured. At the Athenæum, heat, either alone, or aided by a slightly contaminated atmosphere, has been observed to injure new calf bindings; conversely, but in exact agreement with this, at the London Institution, the books in the four small rooms at the angles of the Library, but separated from it by glazed doors fitting very closely, and commonly shut in the winter,—which are therefore at once the least heated, and the atmosphere of which is least contaminated—have suffered less than those either in the body or the gallery of the Library.

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* A remarkable instance of the injurious effects of sulphuric acid, used in the preparation of starch, has come to our notice: some net-lace which had been dressed with starch thus prepared, became charred during the drying process, owing to the dehydration of the sulphuric acid. The starch which had been employed, reddened litmus very feebly. May not calf leather, in the manufacture of which sulphuric acid is used, be injured in a similar way, by long-continued subjection to a dry atmosphere?—Ed.

Strong corroborative evidence that the effect under consideration is attributable, in a great degree, if not indeed principally, to the products of combustion of gas, is afforded by the fact that the binding of almost the entire Library of the Earl of Tyrconnel, whose mansion is lighted with gas throughout, has been destroyed in the manner already described.

The just inferences from all these facts seem to be, with regard to preventive measures—to secure thorough ventilation, to counteract the extreme dryness of the heated air by appropriate means, and, as already effected at the Athenæum, to carry off the products of combustion of the gas, by employing Faraday's gas-lamps, of which an economical modification, consisting essentially of a fish-tail burner placed in a glass cup, has recently been produced.

While it is a matter of some consolation to state that the same dryness of the atmosphere which contributes to destroy the bindings, tends to preserve the paper of which the books themselves consist; yet, on the other hand, there is reason to fear that the acid and other products of the gas may injure the colouring of the plates in illustrated works.

Until the requisite measures for avoiding the evil can be adopted, the policy is indicated of substituting morocco for other leather in binding very valuable and expensive works, of disusing altogether Russia and modern calf, and of employing vellum and cloth as much as possible. In the Library of the London Institution, a varnish has been applied to some of the injured bindings, with apparent success; theoretically, such a preparation would appear to be well adapted to resist the acid of the contaminated atmosphere, as well as that developed by time and an elevated temperature in the leather itself. E. W. B.

DR. HEDLEY'S ETHER INHALER.

We have received from Mr. Anthony, of Bedford, a very simple kind of inhaler, contrived by Dr. Hedley. It is a cylinder, about nine inches long, contracted at one end, which terminates in the form of a mouth-piece. The instrument is made of wood (boxwood, lignum vitæ, cherry-tree, &c.) and the valves are of the same material. About an inch from the mouth-piece there is a valve in the side of the instrument for expiring; the inspiring valve being in the centre of the diameter, about two inches from the mouth-piece. In the body of the instrument, beyond the latter valve, a piece of sponge, wetted with ether, is placed. The simplicity and economy of this inhaler are its chief advantages, and, like other inhalers, it answers the purpose.

ON THE ACTION OF CAUSTIC POTASH ON STARCHES,

And its Employment for distinguishing the different Varieties of Starch.

BY M. MAYET.

At the time when I published my paper on the starches, I had undertaken some experiments with the view of easily distinguishing the different starches or mixtures of them, by practical and easy means. These experiments were not completed when I was obliged to relinquish them for a short time. Since then I have resumed them, and now publish the result.

It is known that caustic alkalies attack and easily dissolve starches, but the comparative action on each kind of starch of an alkaline solution of a definite strength has not yet been sufficiently studied.

As the alkalies did not all appear to answer the purpose equally well, I chose for my experiments solution of caustic potash. The hydrate of potash and soda prepared with alcohol, did not afford equally satisfactory results.

I shall confine myself at present to the description of the characters of those starches which are met with in commerce in powder. I reserve for another series of experiments the foreign starches, in a granulated form, such as sago, tapioca, &c.; but I think I may announce that there is a great difference between the action of alkaline solutions on those presented in their natural state, and others which are artificially prepared. In the first case they are acted upon with difficulty; in the second, on the contrary, they present almost immediately the characters which I shall presently indicate as appertaining to potato starch.

I employed a solution containing a fourth of its weight of caustic potash, which was used in the following proportions:—

Water	60 parts.
Alkaline solution, as above	5 "
Substance to be examined	5 "

The results were as follows:—

With potato-starch—a very thick jelly, of an opaline transparency, which becomes solid in half a minute.

With wheat-starch—the mixture is not solid at the expiration of half-an-hour; furthermore, it is milky, quite opaque, but does not deposit starch.

With arrow-root—the mixture is perfectly liquid, and deposits arrow-root, although frequently agitated. The supernatant liquid is perfectly transparent.

With the starch of bryony-root—the mixture assumes the condition of a transparent jelly immediately, but this jelly is very liquid, and of a pale citrine colour.

With the flour of kidney beans (as a type of the flour of leguminous seeds) —a moderately thick mucilage, of a greenish-yellow colour, and not transparent.

With tapioca flour—a mucilage rather thicker than the preceding, not entirely opaque, showing a great number of swollen masses, not dissolved.

With a knowlege of these characters it is impossible to be mistaken in either of these starches. In fact, potato-starch differs essentially from wheat-starch in the consistence and the transparency of the jelly which it forms, and wheat-starch cannot be mistaken for arrow-root, as the latter is deposited completely to the bottom of the vessel.

After having studied the differences presented by each of these starches, I wished to ascertain if it were possible by similar means to detect admixtures of them, and with this view I made the following experiments:—

I.

Potato-starch Wheat-starch } p. æ.	5 parts.
Water	60 "
Alkaline solution	5 "

forms a solid semi-transparent jelly in two minutes.

II.

Water and alkaline solution	as above.
Wheat-starch	4 parts.
Potato-starch	1 "

forms a very thick opaque and milky mucilage.

III.

Water and alkaline solution	as before.
Wheat-starch	4½ parts.
Potato-starch	½ "

forms an opaque and milky mucilage, not so thick as the preceding, yet easily distinguished from pure wheat-starch, in as much as it does not run in drops from a glass tube, as wheat-starch does.

IV.

Water and alkaline solution	as before.
Arrow-root with ⅕th of potato-starch,	

forms an opaque and consistent jelly in half-a-minute.

V.

Water and alkaline solution	as before.
Arrow-root with ⅕th of wheat-starch,	

forms a non-gelatinous mixture, but after five minutes and two or three agitations, it does not leave a supernatant clear liquor as pure arrow-root does.

VI.

Water and alkaline solution	as before.
Arrow-root with ⅒th of potato-starch,	

forms a thick mixture.

VII.

Water and alkaline solution	as before.
Arrow-root with ⅒th of wheat-starch,	

presents the same characters as No. 5.

I shall not refer to a greater number of experiments, because they all appear to confirm those which I have already described. That is to say, that the introduction into the mixture of a greater or less quantity of potato-starch, gives to the mixture the consistence of a jelly or mucilage in different degrees; whilst wheat-starch, which does not itself assume a gelatinous consistence, only gives a turbid appearance to the liquor, rendering it opaque, without thickening it.

These results appear to be obtained with some degree of certainty, the experiments having been repeated on five or six specimens of each kind of starch obtained from different sources. I can, therefore, state, with confidence, that it is easy to distinguish a mixture of potato-starch with wheat-starch, up to the proportion of one part of potato-starch in ten; or a mixture of wheat or potato-starch with arrow-root in the same proportions.

I have repeated, with great care, the experiments, by means of the vapour of iodine, published by M. Gobley, and am convinced of their correctness under the conditions on which they were made; but independently of their not furnishing the means of distinguishing the mixtures of wheat and potato-starch, they only admit to a certain point, of the detection of an admixture of wheat or potato-starch with arrow-root. Less than a fourth of these substances in the mixture, cannot, by the test of colouration, be detected with certainty.

I thought that I ought not to limit my experiments to the mixtures to which I have hitherto alluded. Although it is desirable to be able to distinguish the admixture of potato-starch with wheat-starch, or with arrow-root, there occurs in commerce a fraudulent admixture, which is of much greater importance. I allude to the introduction of potato-starch into the flour employed by bakers.

The experiments on this subject have been made with the same proportions of water and alkaline solution, as in the previous cases, to five parts of flour.

Pure flour compared with that containing one-fifth of potato-starch, presents as marked a difference as that which occurs with wheat-starch under similar circumstances, that is to say, the mixture containing the potato-starch yields a thicker liquor than pure flour does: but if it contained but one-tenth of potato-starch, this character is not perceptible.

To be more minute, then, I took twenty grammes of pure flour, twenty grammes of flour mixed with one-fifth of potato-starch, and twenty grammes mixed with one-tenth of potato-starch. Each of these was kneaded under a small stream of water, so as to separate the gluten, and then left to subside for twenty minutes. At the expiration of this time, I decanted the supernatant liquor, so as to leave an equal quantity (about 100 grammes) on each deposit. These were introduced into four-ounce stoppered bottles, the bottoms of which were cut off, and the mouths inverted, and ten grammes of the alkaline solution was added to each. In selecting the bottles, care was taken that the mouths were about the same size to each.

The unmixed flour, deprived of gluten, or, in other words, the pure wheat starch, formed a thick mixture in about five minutes, opaque, but running easily through the mouth of the bottle. The product resulting from the flour mixed with a fifth of potato-starch, was quite gelatinous. The product resulting from flour mixed with a tenth of potato-starch, although not so gelatinous as the preceding, was very different from that formed from pure wheat starch, and would not run through the mouth of the bottle. This difference continued for more than twenty minutes, but by degrees each mixture assumed a somewhat similar consistence, but with this difference, that the mixture containing one-fifth of potato-starch was the firmest. *Journal de Pharmacie.*

ON PIGMENTS.

BY DR. J. A. STOECKHARDT.

(Concluded from page 538.)

GREEN PIGMENTS.

1. EXAMINATION IN THE HUMID WAY

(On Paper.)

With Hydrosulphuret of Ammonia.	Unchanged	After drying imperceptibly darker		*Green Earth*	(XII.)
		Disappears by hydrochloric acid		*Arseniate of Oxide of Chrome*	(XIII A.)
	Yellowish after drying	Yellowish-green; by hydrochloric acid yellowish-brown		*Sap Green*	(XIII.)
		Brown; by hydrochloric acid blue; with potash	Yellow or decolourized	*Green Cinnabar*	(XI.)
			Rusty brown	*Green mixture of vegetable yellow and Prussian blue*	(XI.)
	Blackish-brown; by potash blue, after drying	Blue		*Copper Green*	(IX.)
		Brownish yellow		*Arsenical Copper Green*	(X.)

2. EXAMINATION IN THE DRY WAY

(By Combustion of the Pigment strewed on Paper).

Ashes.	Reddish-brown; by longer ignition, grayish black	Paper burns blueish, with a garlic odour	*Arsenical Green*	(X.)
		Paper burns greenish, without a garlic odour	*Copper Green*	(IX.)
	Yellowish to blackish brown	Light	*Vegetable Yellow and Prussian Blue*	(XI. A.)
		By longer ignition, green edged, paper continues to glow slightly	*Green Cinnabar*	(XI.)
	Black, after ignition brown-red		*Green Earth*	(XII.)
	Gray, by longer heating greenish, garlic odour		*Arseniate of Oxide of Chrome*	(XIII A.)
	White, very light		*Sap. Green*	(XIII.)

YELLOW PIGMENTS.

1. EXAMINATION IN THE HUMID WAY

(On Paper.)

With Hydrosulphuret of Ammonia.	Unchanged; by potash	Brownish red; with hydrochloric acid	Unchanged	*Gambege*	(XX.)
			Decolourized	*Fustic*	(XXI B)
			Reddish	*Arnetto Yellow*	(XXI G)
		Reddish-yellow; by hydrochloric acid, paler or decolourized		*Quercitron*	(XXI E.)
		Unchanged; by hydrochloric acid	Unchanged	*Saffron*	(XXI F.)
			Brownish-red	*Arnotto orange*	(XXI G.)
			Colour paler or destroyed	*Weld or Yellow Lake*	(XIX.)
	Unchanged, gradually greenish, to olive brown			*Ochre*	(XVIII.)
	Colour disappears, the same by potash, solution makes lead-paper brown			*Orpiment*	(XVII.)
	Brownish-yellow, after drying again yellow			*Turmeric*	(XXI A.)
	Dark brown or olive-green; by hydrochloric acid	Decolorized		*Chrome Yellow and Orange*	(XIV.)
		Unchanged with potash	Unchanged	*Kassell Yellow*	(XV.)
			Dried paler with reddish border	*Naples Yellow*	(XVI.)

2. EXAMINATION IN THE DRY WAY

(*By combustion of the Pigment strewed on Paper*).

Ashes.	Orange to reddish-brown (paper glows lively longer) by longer heating	On the edges green	*Chrome Yellow*	(XIV.)
		Brittle, blackish-gray, metallic grain	*Chrome Orange*	(XIV.)
	Black, then brown red to yellowish red		*Yellow Ochre*	(XVIII.)
	Yellow, then malleable metallic globule, by combustion a white smoke		*Naples Yellow*	(XVI.)
	Likewise malleable metallic globule		*Kassel Yellow*	(XV.)
	White	Light; by combustion a yellowish smoke. and odour of burning sulphur, and at last of arsenic	*Orpiment*	(XVII.)
		Light	*Vegetable Yellow*	(XX. XXI.)
		Heavy	*Yellow Lake*	(XIX.)

RED PIGMENTS.

1. EXAMINATION IN THE HUMID WAY

(*On Paper*).

With Hydrosulphuret of Ammonia.	Blackish brown; with hydrochloric acid	White		*Minium*	(XXIV.)
		Green, then white		*Chamois* [*Minium*]	(XXIV. A.)
	Unchanged, then slowly olive green; with hydrochloric acid	Orange, then yellow to colourless.		*Chrome Red*	(XXIII.)
		Unchanged or in part dissolved		*English Red*	(XXV.)
	Unchanged, or transiently darker; with hydrochloric acid	Unchanged; with potash	Unchanged	*Cinnabar*	(XXII.)
			Violet to colourless	*Lac Dye*	(XXVI D.)
			Brown red	*Red Sanders*	(XXVII D.)
			Grayish-blue	*Alkanet*	(XXVII D.)
		Yellowish-red; with potash	Violet	*Madder*	(XXVI C).
				Carmine	(XXVI A).
			Pale violet to colourless	*Cochineal Lake*	(XXVI A.)
	Paler to decolorized; by hydrochloric acid	Yellowish-red; with potash violet to colourless		*Lac Dye and*	(XXVI D.)
				Red Wood	(XXVI B.)
		Decolourized; the same with potash		*Safflower*	(XXVII.)

2. EXAMINATION IN THE DRY WAY

(*By Combustion of the Pigment strewed on Paper*).

Ashes.	Blackish brown, by longer heating	Grayish-black, brittle, metallic globules		*Chrome Red*	(XXIII.)
		Brownish-red, earthy		*English Red*	(XXV.)
	Malleable metallic globules			*Minium* (*Chamois*)	(XXIV.)
	White	Light	By combustion, pungent, sulphur odour, the smoke blackens lead paper	*Cinnabar*	(XXII.)
			Burning without very peculiar odour	*Carmine*	(XXVI.) (XXVII.)
				Vegetable Red	
		Heavy		*Red Lac Colours*	

BROWN AND BLACK PIGMENTS.

1. EXAMINATION IN THE HUMID WAY

(*On Paper*).

With Hydrosulphuret of Ammonia.	Darker	Very slowly; with potash unchanged; with hydrochloric acid yellow, soluble			*Turkey Umber* (*English Brown Ochre*)	(XXVIII.)
		Quicker and deeper, with potash blacker			*Cologne Umber*	(XXIX A.)
	Unchanged; with potash.	Reddish brown			*Catechu*	(XXXI.)
		Unchanged; by hydrochloric acid	Unchanged brown		*Sepia*	(XXX.)
			Unchanged black	Effervescing	*Bone Black*	(XXIX C.)
				Metallic gray	*Graphite*	(XXIX D.)
				Dull	*Soot*	(XXIX B.)

2. EXAMINATION IN THE DRY WAY

(*By Combustion of the Pigment strewed on Paper*).

Ashes.	Black, then brown-red			*Turkey Umber* (*English Red*).	(XXVIII.)
	Blackish-gray, metallic brilliancy			*Graphite*	(XXIX D.)
	White....	or yellowish, light, bituminous odour in burning		*Cologne Umber*	(XXIX A.)
		Light, an ammoniacal empyreumatic odour in burning		*Sepia*	(XXX.)
		Light ..	(Brown colouring matter)	*Catechu*	(XXXI.)
			(Black colouring matter)	*Soot*	(XXIX B.)
		Heavy, effervescing with acids		*Bone Black*	(XXIX C.)

WHITE PIGMENTS.

1. EXAMINATION IN THE HUMID WAY

(*On Paper*).

Hydrosulphuret of Ammonia.	Brownish-black			*White Lead*	(XXII.)
	Unchanged; by hydrochloric acid.	Soluble with effervescence	Ashes hot yellow, cold white	*Carbonate Zinc*	(XXXIII.)
			Ashes hot white, cold white	*Chalk, or Bone Ashes*	(XXXIV A.
		Unchanged		*Heavy Spar*	(XXXIV B.)
				Gypsum	(XXXIV C.)
				Clay	(XXXIV D.)
				Talc	(XXXIV E.)

2. EXAMINATION IN THE DRY WAY

(*By Combustion of the Pigment strewed on Paper*).

Ashes.	Fusing to a metallic globule			*White Lead*	(XXXII.)
	In the hot state	Yellow		*Carbonate of Zinc*	(XXXIII.)
		White	Restores the colour of reddened litmus	*Chalk, Bone Ashes*	(XXXIV A.)
			Does not ditto	*Heavy Spar, Gypsum, Clay, Talc*	(XXXIV B.)

METAL PIGMENTS.

1. EXAMINATION IN THE HUMID WAY

(*On Paper*).

Hydrosulphuret of Ammonia.	Immediately dark brown			*Leaf Gold and Gold Bronze* (spurious)	(XXXV.) AND (XXXI.)
	Unchanged; by potash	Gray, brilliancy disappeared		*Silver Leaf and Silver Bronze* (spurious)	
		Unchanged	Gold brilliancy	*Leaf Gold and Gold Bronze* (genuine)	
			Silver brilliancy	*Silver Leaf and Silver Bronze* (genuine)	
		Darker, colours lead-paper brown		*Mosaic Gold*	(XXXVII.)

2. EXAMINATION IN THE DRY WAY

(*By Combustion of the Pigment strewed on Paper.*)

Ashes.	Gold lustre	*Gold Bronze and Leaf Gold* (genuine)	(XXXV.) AND (XXXVI.)
	Silver lustre	*Silver Bronze and Silver Leaf* (genuine)	
	Grayish black, by burning variegated	*Gold Bronze and Leaf Gold* (spurious)	
	White or gray, earthy	*Silver Bronze and Silver Leaf* (spurious)	
	Brown, then grayish white, by burning evolves the odour of burning sulphur	*Mosaic Gold*	(XXXVII.)

ON THE PREPARATION OF A BROWN PIGMENT FOR MINIATURE PAINTING.

BY DU MENIL.

The sediment which is deposited from a solution of caustic potash in spirit of wine, is recommended as an excellent brown pigment for miniature painting. It is obtained by mixing a few pounds of coarsely powdered caustic potash, with two parts of alcohol, and filtering the solution. If the latter be then heated for a few hours, it becomes deep brown, and the delicate powder which falls down, is collected on paper, and washed with water acidulated with hydrochloric acid. It may also be obtained by fusing three parts of sugar with one part of caustic potash, in a copper pan, until the mixture assumes a brown colour; it is then to be dissolved in water, filtered, and an excess of hydrochloric acid added.—*Pharmaceutisches Central Blatt.*

ON BUTYRO-ACETIC ACID OBTAINED FROM CRUDE TARTAR.

BY J. NICKLES.

Some time since, Nöllner obtained a new acid from crude tartar, and from a certain similarity which it possesses with acetic acid, he called it *pseudo-acetic acid.* It is sometimes formed by evaporating a solution of tartrate of lime, as it is usually obtained from crude tartar in summer heat. Carbonic acid is developed, and in the residue the new acid is found. It certainly does possess great similarity with acetic acid, but differs from the latter by its atomic weight, and by the salts which it forms with soda, oxide of lead, and oxide of silver.

By a simple test, Berzelius was induced to pronounce it a mixture of acetic acid, and butyric acid.

He found that on shaking it with ether, the latter dissolved an acid which possessed all the characteristics of butyric acid; that after being saturated with carbonate of baryta, the undissolved parts yielded to boiling absolute alcohol, new quantities of butyrate of baryta, and a residue of acetate of baryta. The acid, examined by Berzelius, had consequently already undergone a change, which must have been a consequence of boiling or of exposure to the atmosphere, as is the case with other acids.

In order to examine this fact, I tried a sample, which I obtained from Mr. Nöllner, but this acid also had already undergone the same change.

It no longer formed as before a lead-salt crystallizing in octohedra, and chloride of calcium precipitated a layer of butyric acid, whilst acetic acid remained in the solution. Nothing was now left to be done, but to substantiate by analysis the statement made by Berzelius, and for this purpose, I made use of the silver salt. The acid saturated by carbonate of ammonia, was mixed boiling with nitrate of silver, filtered, and left standing, in order to crystallize. After the lapse of an hour, magnificent needles of acetate of silver had formed. The mother liquor yielded fresh crystals, similar to the first, followed by beautiful dendritic crystals. The latter were dried *in vacuo* and analysed. The results were as follows:—

	Calculated.	Found.
C_8	24.61	24.48
H_7	3.58	3.87
O_3	12.35	11.89
Ag O	59.46	59.76
	100.00	100.00

This was consequently butyrate of silver. The first crystals yielded on analysis the following results :—

	Calculated.	Found.
C_4	14.37	14.32
H_3	1.79	1.81
O_3	14.37	14.43
Ag O	69.46	69.44
	100.00	100.00

The latter salt, was, therefore, acetate of silver. When united, both acids possess qualities which have hitherto not been noticed. Thus the butyric acid mixed with acetic acid, is not precipitated by acetate of lead; the sample obtained from Nöllner was not precipitated even by the tribasic acetate of lead. When a mixture of the acids is saturated with oxide of lead, and then excess of ammonia added, small, rose-coloured needles are formed after a short time, which consist of basic butyrate of lead, which is dissolved in water by the acetic salt. This mixture of butyrate and acetate of lead forms with chloride of barium a precipitate, which redissolves on shaking the liquid, and only remains in solution by adding an excess of chloride of barium. Both lead salts separately show the same property, but in a much less degree, and both yield after some time, a sediment of chloride of lead.

I then examined an acid of the same origin, which I obtained from Professor Liebig, who had obtained it from Nöllner. When this salt was decomposed by sulphuric acid and distilled, an acid was obtained, which yielded with baryta a salt which crystallized in beautiful prisms, having a rhombic base; and besides this, small white protuberances solely composed of acetate of baryta, which latter can be obtained pure by repeated crystallization.

This peculiar acid is obtained in a pure state by decomposing its soda salt with phosphoric acid. In this case it floats as an oily layer on the surface of the liquid. Its boiling point is 140° C. By sulphuric acid and warmth it is easily decomposed, whilst sulphurous acid is developed. Its smell is similar to that of sweat, and distilled with potash and arsenious acid it forms alkarsin. This appears to show that acetic acid and butyric acid combine in as yet unascertained proportions, in such a manner, that they form only one acid, which possesses peculiar properties, different from those of either of the two acids separately, and which I intend to designate *butyro-acetic acid.* The crystals of the barytic salt are very easily dissolved in hot water, but very slightly so in absolute alcohol. They undergo no change by keeping, but develope a smell of rancid butter.

The analysis lead to the following formula for it :—C_6 H_5 O_3 Ba O.

The crystals contain one atom of water.

The other salts were formed from the barytic salt. The potash and soda salts are deliquiescent. The zinc salt dissolves in water, but becomes decomposed on being boiled. The lime salt forms silk-like fibres, which become efflorescent in the air, and dissolve in water.

Its composition is C_6 H_5 O_3 Ca O.

The butyro-acetate of silver crystallizes in dendritic crystals, which change easily in the light. Their formula is C_6 H_5 O_3 Ag O.

The copper-salt crystallizes in oblique prisms, dissolves easily in alcohol, but only slightly in water; if, however, acetic acid be added, it dissolves, and shows the motion peculiar to the butyro-acetates. If heated to 100° C. in a current of dry air, it loses water, and at 150° C., part of its acid. The products of this dry distillation, are, an odorous liquid, which consists of butyro-acetic acid, and an oily substance insoluble in water, carbonic acid, and carburetted hydrogen. The residue contains copper and carbon.

If ammonia be added to butyro-acetate of lead, small rose-coloured needles soon form at the bottom of the vessel, similar to those which are obtained from a mixture of acetate and butyrate of lead. In several analyses, I did not obtain a satisfactory result, but always less carbon than corresponded with the butyric acid, and more than corresponded with butyro-acetic acid.

I have before observed, that a mixture of butyrate of baryta dissolves a large quantity of chloride of lead, without forming a distinct combination; if, however, chloride of barium be poured into a concentrated solution of butyro-acetate of lead, an abundant precipitate is first obtained, which dissolves again on being shaken, but if the addition of chloride of barium be continued till the precipitate no longer dissolves, the whole then filtered and left to evaporate spontaneously; chloride of lead is precipitated first, and then magnificent crystals, which appear to have the form of square prisms. They easily dissolve in water, and produce on the surface that motion peculiar to these salts. By testing, we detect chloride of lead, and barium.

At 100°, this salt loses 2.59 per cent. of water; it contains equal equivalents of lead and barium; the first in two conditions, since by heat, both oxide and chloride of lead are formed.

After repeated crystallizations, the mother liquor of the butyro-acetate of baryta deposits small white protuberances, which do not change in the air, and dissolve easily in water without rotation; acetic acid is discovered in them by testing. This salt contains two and a half atoms of water.

It might perhaps be assumed that the butyro-acetic acid is formed from the impurities contained in crude-tartar; but this view is opposed to the fact that a solution of crystallized tartaric or citric acid contains, after some time, a considerable quantity of acetic acid. Pure tartaric acid, therefore, is capable of yielding acetic acid, without the presence of foreign substances which can act in no other way than as a ferment. We may consequently assume that the lime changes the reaction, and produces from the elements of the tartaric acid, a certain quantity of butyric acid, which combines with the acetic acid, to form the butyro-acetic acid.—*Ann. der Pharm.*, lxi., p. 343.

PREPARATION AND PHYSIOLOGICAL RELATIONS OF GLYCOCOL

BY E. N. HORSFORD.

This substance is easily obtained pure in the following way:—3 or 4 ounces of hippuric (prepared after the method of Bensch) are placed in a retort, whose capacity is about a quart. To this four times its weight of concentrated muriatic acid are to be added, and the mixture warmed over the spirit-lamp until a perfect solution is obtained. A gentle heat is continued for about half-an-hour, when water is added. At this period part of the benzoic acid precipitates in the form of oily drops, which crystallize on cooling; the muriatic gelatine sugar remains in solution in the water. When the greater part of the benzoic acid has crystallized, the contents of the retort are placed in a filter, and washed as long as the filtered liquid continues to taste acid. The latter is now evaporated in a water-bath in an open porcelain cup, almost to dryness, during which process the greatest part of the muriatic acid and the benzoic acid are removed. This process having been repeated two or three times, the muriatic gelatine sugar remains at last behind in a pure state. Ammonia is now added, until the liquid has an alkaline reaction, and on the addition of absolute alcohol, a white precipitate of glycocol is produced. This consists of small crystals; some traces of benzoic acid and sal ammoniac remain dissolved in the liquid. After some time the precipitate is placed on a filter and washed with absolute alcohol, until the filtered fluid no longer occasions a precipitate with nitrate of silver.

Properties.—The hydrate of glycocol thus obtained has a sweet taste, but not so intense as that of cane-sugar. It possesses no smell and does not react upon litmus paper. It dissolves in 4.24 to 4.35 parts of cold water, more easily in hot than in cold spirit of wine, and is almost entirely insoluble in ether and absolute alcohol. If heated with a concentrated solution of potash, ammonia is developed, and the liquid assumes a beautifully fire-red colour, which however soon disappears. The same takes place if hydrate of baryta or oxide of lead be heated with it. A very small quantity of glycocol added to a solution of sulphate of copper, prevents the precipitation of the oxide of potash, and the liquid assumes a peculiar blue colour. If a solution of glycocol be boiled with oxide of copper the latter dissolves, whilst the solution assumes the same blue colour, and when cold a substance in the form of fine needles crystallizes out of it.

Out of a concentrated solution in diluted spirit of wine or water, there are formed by spontaneous evaporation crystals which belong to the monoklinometric system.

Physiological Relations.—Mr. Alexander Ure had observed that human urine contained hippuric acid after the use of benzoic acid; and Garrod and Keller have proved this fact in the most satisfactory manner. Pettenhofer found in the urine of a girl who was afflicted with chorea, and who lived only upon apples and bread, a considerable proportion of hippuric acid. On recurring to animal food, the abnormal quantity of this substance diminished. The presence of this acid in the urine of horses, cattle, and human beings, living exclusively on vegetable food, is well known.

These facts, in conjunction with the recently-discovered properties of the hippuric acid, suggest the following question:—Are glycocol and benzoic acid, as such, constituents of the animal textures, viz. of the albumen fibrine, and casein, or of the corresponding bodies in the seeds and juices of plants?

1. Braconnot obtained glycocol by treating glue with sulphuric acid; Mulder and Boussingault by treating it with caustic potash; and Keller obtained it from the tissues or fluids of the human body, by treating them with benzoic acid. The group of atoms in glycocol resists more strongly the destructive influence of sulphuric acid, or of potash aided by heat, than the remaining elements of the glue, which become for the greatest part oxidized.

Albumen, fibrine, or casein, which proceed from the food into the blood, are again transformed, as soon as they have become parts of the organism, into carbonic acid, ammonia, sulphate, phosphate, and water, out of which they had been constituted. They become oxidized, without all these complex combinations being simultaneously produced by this oxidation. At a certain period, glycocol separates and appears in the urine as hippuric acid, in the same way as it escapes becoming oxidized by potash or sulphuric acid.

2. Fumaric acid is contained in many plants. Asparagus contains the elements of fumaric acid and ammonia, and would yield upon a proper transposition glycocol.

$$2\,(C_4\,H\,O_3\,N\,H_3) = C_8\,H_8\,N_2\,O_6 = 2\,(C_4\,H_4\,N\,O_3)$$

3. Schlieper, on treating glue with chromic acid, obtained, besides other products, also benzoic acid. The same acid is frequently met with in the vegetable kingdom, *e. g.* in the resin called benzoin.

We find consequently benzoic acid and glycocol (asparagin) in the vegetable kingdom, in the animal textures and in the form of hippuric acid in the urine.

It remains, therefore, yet to be shown whether it is also contained in animal and vegetable albumen, fibrine, and caseine.

Formation of Lithic Acid calculi.—Keller found urea and lithic acid in the urine after separating hippuric acid, and concluded from this that the supposition of Mr. Alexander Ure, that benzoic acid prevented the formation of calculi in the urine, was erroneous.

The following experiments with regard to this point will not be read without interest :—

Urine passed in the morning (the person subsisting on vegetable and animal food) was evaporated in the water-bath to the consistency of syrup, and tested for glycocol; but neither in the alcoholic extract, nor in the residue, the presence of glycocol could be proved by oxide of copper. Nitric acid produced a precipitate of nitrate of urea, but in no great quantity.

The following evening at ten o'clock the person took four grammes of glycocol dissolved in water, but without the least effect. The urine passed on the following morning had an acid reaction, but had the same colour as that of the day before. After being evaporated to the above-mentioned consistence, the quantity was greater than on the preceding day.

One part was mixed with oxalic acid, then neutralized with carbonate of soda, and exhausted by spirit of wine. Another part was mixed with excess of acetate of lead and was treated with sulphuretted hydrogen. After being evaporated to the consistence of syrup, neither of the samples tested with oxide of copper showed any trace of glycocol.

Glycocol had consequently disappeared, and in its stead considerable quantities of urea and lithic acid had been formed. I have already stated that if from two atoms of hydrate of glycocol one-half atom of grape-sugar be subtracted, urea remains. It is therefore possible that glycocol is decomposed in this manner, and that the sugar becomes decomposed into its products of oxidization. With this intention the same was treated with nitric acid, but neither by concentrated nor diluted acid, neither by a strong heat, nor by a continued more gentle heat, could the desired result be obtained.—*Annalen der Pharmacie*, lx.

CYANIDE OF POTASSIUM IN CAUSTIC POTASH.

The presence of cyanide of potassium in caustic potash was discovered by Dr. Herzog, whilst preparing carbonate of potash from pale coloured argol. Even after the preparation had been boiled for several hours with water and caustic lime, the cyanide of potassium was not yet decomposed.—*Pharmaceutisches Central Blatt*, No. 56, for 1846.

QUININE AND CAFFEIN IN THE FLESH OF ANIMALS.

Professor Liebig has written to Dr. Daubeny, the President of the Ashmolean Society, regretting that owing to his lectures he will be unable to attend the meeting of the British Association this year at Oxford. The Professor stated that he had discovered the vegetable principles in the muscular flesh of animals—namely, caffein, the principle of tea and coffee, and quinine, that present in bark.—*Times*, May 10, 1847.

PROSECUTIONS BY INDICTMENT UNDER THE APOTHECARIES' ACT.

BOLTON QUARTER SESSIONS.

James Flitcroft, a bricklayer by trade, but now a shopkeeper, residing in Boardman Field, was indicted for misdemeanour, having practised as an Apothecary without a certificate. The charge was made under the 55th of

Geo. III., c. 194, the fourteenth section of which prohibits parties from practising as Apothecaries, without being duly qualified by a certificate from the Apothecaries' Company.

It appeared from the evidence, that the defendant was known in the town as agent or assistant to Dr. Coffin, an herbalist, and that his practice consisted principally in the administration of herbs. The sign over his shop was, "*James Flitcroft, vendor of herbs from America, licensed to sell tea and coffee.*" A coroner's inquest had been held in one case in which a child had died under his hands, after the administration of *Lobelia inflata* and capsicums: but this prosecution was not founded upon any specific cases in which harm had resulted from his practice, but on the broad principle of his being unlicensed.

It was stated that Dr. Coffin, who lives at Manchester, had an American degree, and was the author of a book on the use of medical herbs, by which book Flitcroft regulated his practice. No mineral substances were used.

The Recorder in summing up, said, the question was not whether the medicines had been properly prescribed; but whether, in prescribing them, the defendant acted as an Apothecary. The intention of the Act was, to prevent unskilful persons from acting as Apothecaries, to the danger of her Majesty's subjects. There was a section in the Act, imposing a penalty, if the parties had thought proper to proceed in that way, but it was equally open to them to proceed, as they had done, by indictment.

The jury, after deliberating for about an hour, returned a verdict of *Guilty*.

Mr. Brandt, who appeared for the prosecution, said the object was only to show what the law really was, and there was no desire in this case to ask for severe punishment.

The Recorder sentenced Flitcroft to one month's imprisonment in the New Bailey.

CENTRAL CRIMINAL COURT.

(*Thursday, May* 13.—*Before Mr. Baron Alderson.*)

MICHAEL SWEETMAN was indicted for a misdemeanour, in having unlawfully practised as an Apothecary without having undergone the required examination and obtained a licence from the Apothecaries' Company. Mr. Clarkson appeared for the prosecution, and Mr. Ballantine and Mr. Huddlestone for the defence.

The Defendant, who surrendered, pleaded guilty to the indictment.

Mr. Ballantine said that he felt he had no answer to make to the charge on the part of the Defendant, and he could only inform the Court that there was no imputation upon his moral conduct, or of unskilfulness; but still he had, no doubt, infringed the law, and the Apothecaries' Company were perfectly justified in adopting the present prosecution. With these remarks he must leave the Defendant in the hands of the Court. *Mr. Baron Alderson* said, he believed this was the first prosecution of the kind. *Mr. Clarkson* said it was; but he thought it right that it should be publicly known that it was the intention of the Apothecaries' Company to prosecute in future in every case; as they were determined to put an end to the system of unauthorized and unqualified persons acting as Apothecaries, as such a proceeding was calculated to do great injury to the public.

Mr. Baron Alderson said the offence, no doubt, amounted to a misdemeanour, but, as this was the first * prosecution of the kind, the justice of the case would probably be met by the Defendant entering into recognizances to appear and receive judgment if he should be required to do so; and if he refrained from carrying on his calling, or obtained a legal licence to enable him to do so, he would probably hear no more of the matter.

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* This is an error, as the trial at Bolton occurred a few days previously.

Mr. Ballantine said, that the Defendant was anxious he should state that he had pursued a regular course of study for the profession in which he had been engaged, and he would have taken out a licence but that circumstances had prevented him from doing so. He would now, however, immediately take the necessary steps to pass the required examination and obtain a licence.

The *Court* then ordered the Defendant to enter into his own recognizances in £100, and find two sureties of £50 each, to appear and receive the judgment of the Court, if required.

MEDICAL CIRCULAR.

AN IMPROVED SYSTEM!

29, *F——— Square, February*, 1847.

DEAR MADAM,—You are aware of the partnership between Mr. C—— and myself being dissolved. So little time has since passed that I have not yet been able to do myself the pleasure of paying a friendly visit to all whom I have had the happiness to visit professionally during the last three years. I, therefore, take the preliminary means of self-introduction in my sole character, awaiting the early opportunity of paying my respects to you in person.

Very many since my separation from Mr. C—— have kindly expressed their wish I should attend them in future, whenever they may require the services of a Medical Man. I trust the system which I have adopted will meet with general approval: the intention of it is to abolish entirely the system of drugging Patients with draughts and mixture upon mixture, to make a bill. This is cruel to the Patient and disgraceful to the Medical Man. The plan which I have adopted is one becoming very general, and all those to whom I have had the opportunity of explaining myself have been much pleased with the proposition, and to it have given their unqualified approval. The plan is that one moderate annual fee of £2 2*s.* for self and family shall be my remuneration for surgical, medical attendance, and for medicines during the entire year.

Should I be fortunate enough to be permitted to place your name on my list, every attention shall be paid, and the best of my abilities exercised to acknowledge the kind confidence and honourable trust placed in,

Your faithful servant,
T—— I——

ANSWER TO MR. SWINFEW.

SIR,—IN the journal for March, there is a letter from Mr. R. B. Swinfew, of Whitwick, Leicestershire, containing assertions (which, I believe, have reference to me) totally untrue and without foundation, and which I wish to refute or rather explain; but in doing so I am rather late, the delay arising in part from not having that number of the journal till about the middle of last month, and partly from not being able to get an answer (after repeated attempts by letters, &c.) from Mr. Swinfew as to whether it did refer to me or not.

Many times during the last winter, an elderly gentleman (who I now find to be Mr. Swinfew) visited my shop, mostly on a Saturday in the midst of market, to purchase many trifling articles, or to have a few pills made; generally asking for them in half Latin and half English names, and at the same time rudely desiring to be waited upon before those who were previously in the shop, much to the annoyance both of myself and customers. On one of his visits I remember he did ask to see a Pharmacopœia, but supposing him, from his appearance and manners generally to be a quack (with which this neighbourhood abounds), I gave him Thomson's *Conspectus*, eleventh edition, published in 1838, and not of 1810, as he asserts, or even a second-hand book, not because I did not possess a London Pharmacopœia, but because I was much engaged at the time and this book being at hand. I supposed he would know as much about the one as the other; and in thinking so I am not much mistaken, while he supposes the date of the preface to the first edition, which is printed in every subsequent edition, to be the year the book was published in.

This, Sir, and this only, I believe, to be the ground of Mr. Swinfew's uncalled for and ungenerous assertions, and I fear from what I have since learned, from persons who know him well, he could not be actuated by any good motive either towards myself or to our body at large.

I remain, Sir, yours very respectfully,

Ashby de la Zouch, May 17, 1847. JOHN REDFERN.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

SIR,—ON looking over the proposed bill for the protection of our body, I am very much astonished to find that there is no restriction against the sale of drugs or chemicals by ignorant and incompetent persons. I am quite certain that a very large majority of the trade will feel equally astonished and disappointed; although I am ready to admit there are individuals, and amongst the number not a few who are Members of the PHARMACEUTICAL SOCIETY, who not only sanction, but encourage this species of quackery, by supplying drugs and chemicals of inferior kinds, or very much adulterated, to the class of persons above alluded to. These parties will not complain, but rather rejoice, that their trade will not be interfered with; for the small shopkeeper will no doubt continue to sell drugs, although he may not be allowed to call himself Chemist or Druggist. General dealer, or any other name, will suit his purpose quite as well.

The promoters of the bill profess to say, that the enactment is for the benefit of the public as well as ourselves. Now I think it will be admitted that nine-tenths of the public know nothing of the quality of drugs or chemicals, and are, therefore, as likely as ever to be imposed upon. Nothing short of restricting the sale to competent persons will cure the evil so loudly complained of.

I am, Sir, yours respectfully,

Stockport, 19*th May*, 1847. W. SHAWCROSS.

[The above is inserted as expressing concisely the sentiments of several correspondents. The Council will, of course, endeavour to secure to qualified Chemists as much protection as possible.—ED.]

NOTICES OF BOOKS RECEIVED.

ON THE REMEDIABLE EVILS ATTENDING THE LIFE OF THE PEOPLE ENGAGED IN PROFESSIONS, COMMERCE, &c. By J. EVANS RYADORE, M.D., F.L.S., &c. London: Sherwood, Gilbert, and Piper. Small 8vo, pp. 130.

DESCRIPTION OF AN APPARATUS FOR THE INHALATION OF ETHER VAPOUR, WITH SOME REMARKS ON ITS USE. By J. S. TRACY. London: Ferguson, Giltspur Street. 8vo, pp. 30.

CASE OF A LARGE SECONDARY PROSTATIC CALCULUS. By T. HERBERT BARKER, M.B., LONDON. Worcester: Deighton and Co. 8vo, pp. 12.

TABLE OF URINARY DEPOSITS, WITH THEIR TESTS, FOR CLINICAL EXAMINATION. By RAY CHARLES GOLDING, M.D. London: Henry Renshaw, Strand.

THE MICROSCOPIC ANATOMY OF THE HUMAN BODY. By A. H. HASSALL. Part IX.

TO CORRESPONDENTS.

A. B. C. states that in attempting to reduce oxide of iridium by passing over it a current of hydrogen gas, he found that, without applying artificial heat, the oxide became red hot from the action of the gas.—[We have not seen this effect described before—may it not have arisen from the presence of platinum in the oxide?]

A. M. P. S.—The first part of Dr. Clark's process for the examination of water is given in vol. i., pp. 156 and 216, and vol. iv., p. 9 of this journal.

"*Tannin.*"—Sulphate of iron is commonly used by curriers for producing a black on the grain of leather, the skins being previously put into a bath of sumach.

"*Inquirens.*"—(1 and 2) See Parnell's *Chemical Analysis.*—(3.) The horse medicines alluded to are not usually given to cows; see Blair's *Veterinary Art.*—(4.) Superphosphate and sulphate of lime.

B. P.—We know of no depilatory that can be used without risk of some injury to the skin.

M. P. S. (*Manchester*).—The leaves of Hyosciamus and Digitalis appear, so far as we can judge from dried specimens, to be of the first year's growth.

C. C. (*Bath*).—It is not liable to a stamp.

"*Josephus*" (1.) inquires, when Acid Hydroc. is ordered in a prescription, should hydrocyanic or hydrochloric acid be used? [It would be impossible to answer the question without inquiring of the author of the prescription].—(2.) The term Potassæ Citras is sometimes applied to the effervescing powder called also acidulated kali.

O. J. A. inquires where cod liver oil can be obtained at the present time? [We should be glad to find out.]

H. H. (*Sheffield*), in allusion to a remark made by a Correspondent last month, respecting the employment of secret formulæ by Physicians, observes that he does not believe the practice is adopted by any Physicians in that place; but that some General Practitioners who have discontinued their shops employ Druggists to dispense their prescriptions. In such case, each practitioner sends his prescriptions to the Druggist with whom he has an account, and for convenience may in some cases use conventional terms.—[This plan is not objectionable, the arrangement being quite understood by the patient, on whom no imposition is practised. The per centage system between the Physician and Druggist is quite different, the Physician pretending to prescribe gratuitously, but secretly dividing the spoil with the Druggist, who, of course, charges accordingly.]

"*Juvenis.*"—(1.) The combination of Taraxacum and Sarsaparilla is not uncommon, and has been recommended in some cases.—(2.) Brandish's Alkaline Solution is taken as an alterative, and for correcting acid.—(3.) The compound may be made in any proportions that may be required.

Mr. Blyth has sent us some remarks on an inquest at Honing; the deceased having died while under the treatment of a herb-dealer and astrologist, who, if we may judge from the report would be a suitable subject for the application of the powers recently discovered in the Apothecaries' Act.

"*Chemicus.*"—(1.) Graham's *Chemistry.*—(2.) The practice of medicine cannot be learnt by means of any book "value £1 or £1 5*s.*"—(3.) Royle's *Materia Medica* is a very good work.—(4.) We also recommend *Selecta é Prescriptis.*

A. M. B. A.—For the formula for a storm-glass, see vol. ii., page 777.

J. A., A. P. S.—Cyanide of potassium, when pure, is white; that which is sometimes sold is slightly coloured from the presence of foreign matter.

"*Medicus.*"—We should not like to incur the responsibility of giving advice in so important a matter without more information respecting the circumstances of the case. Perseverance and industry are equally necessary in both professions. The choice should be regulated by the taste and capacity of the party concerned.

S. X.—A Member of the Pharmaceutical Society, on retiring from the business, is not obliged to resign his Membership, unless he should engage in any pursuits incompatible with the regulations of the Society.

E. J. G. (Portsmouth); A. B. (Doncaster); C. S. (Nottinghamshire), and *W. T. J.*—A Candidate for the Minor Examination at the Pharmaceutical Society must produce a certificate either of having served an apprenticeship of not less than four years, or a term of pupilage equivalent to it. No person can be admitted as an Associate without passing this Examination. See vol. ii., No. 8.—When the Pharmaceutical Bill has passed, the Examination will be more stringent than at present. In order to pass the preliminary Classical Examination as an Apprentice, the Candidate should be able to translate the more familiar Latin school-books.

Communications respecting the proposed Pharmaceutical Bill have been received from Messrs. Thomas, Burnley; Cubitt, Norwich; Smeeton, Leeds; Horner, Hartlepool; Morgan, Llandilo; Stavely, Leeds; Barry, Plough Court; Mabson, Great Yarmouth; Nettleship, Lincoln; Clark, Oakham; Baxter, Bromley; Wick, Hadleigh; E. M., Guildford; Mackay, Edinburgh; Mason, Hastings; Grounds, Ludlow; Richards, Dartmouth; Deck, Cambridge; Coates, Leicester; Mordaunt, Southampton; Anthony, Bedford; besides many Members and Associates, who have not signed their names, and others who have been answered by post. All the above letters are preserved, and will receive due consideration. Several are answered in pages 556, 578.

Mr. Dunlop.—We are obliged to defer it for want of space.

E. M.P.S. informs us that the occurrence mentioned last month, under the head "Free Trade in Poisons," did not occur at Guildford. We believe it was at Kingston.

Mr. Owen (Montgomery).—The specimen is a very good one.

ERRATUM.

In page 549, line 18 from bottom, *for* "lactic" *read* "lactid," the name of the *nucleus* or basis of lactic acid.

Advertisements to Mr. Churchill, Princes Street, Soho.

Instructions from Members and Associates, respecting the transmission of the Journal, to Mr. Smith, 17, Bloomsbury Square, before the 20th of the month.

Other Communications to the Editor, 338, Oxford Street, (before the 20th of the month, if answers be desired in the ensuing number).

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